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Front Cover: A Glassworks Furnaceman

OUR CONTRIBUTORS

J. E. ATHERTON draws on his experiences at the various Works in Alkali Division to write entertainingly on Works Cats. He joined the Company in 1918 as a Laboratory Assistant, and is now in the Fuel Section of the Power Services Department.

A. W. BALDWIN writes on Liar Dice with an intimate knowledge of the game born, if one may hazard a guess, of bitter experience. He needs no introduction to readers. An Associate Research Manager in Dyestuffs Division, he has been over twenty-eight years in the Company's service. From 1943 to 1948 he was Head of Dyestuffs Division Publicity Service.

HOWARD CUNNINGHAM, C.B.E., M.C., who writes on the extensive ramifications of that remarkable I.C.I. subsidiary Scottish Agricultural Industries Ltd., is pre-eminently qualified for this task. Not only has he been their Managing Director since 1948, but also, as a Director of one of the Company's principal constituent firms, he was intimately concerned in the negotiations which preceded the formation of S.A.I. in 1928. He won his M.C. in the first world war at the age of 21, and was awarded the C.B.E. for his services during the last war as Fertiliser Controller to the Ministry of Supply.

RONALD FARQUHARSON, who writes on the prospects of a career under the Red Duster, is I.C.I. Shipping Manager—a position to which he has risen after thirty years' service with the Company, much of it spent in China. His main interests in life, he tells us, are ships, cargoes and personalities. An account of his experiences in the Far East will be published shortly in a book entitled Confessions of a China Hand.

HARRY TOWNLEY, the miniature railway enthusiast, is appropriately enough a native of Crewe, where he served an apprenticeship in the L.N.W.R. He is a member of the Buxton Model Engineering Society and the Manchester Model Railway Society.

TEN GREEN BOTTLES

and how they are made by

The Portland Glass Company Ltd.



MAKERS of glass bottles today to the tune of fifty million bottles a year, the Portland Glass Company Ltd. was formed by Nobel's Explosives Company, shortly after the first world war, to meet a particular set of circumstances. On the one hand there was a shortage of beer bottles for Scottish brewers; and on the other there were, at the little Ayrshire town of Irvine on the west coast of Scotland, large surplus stocks of one of the principal ingredients of glass, sodium sulphate—a material derived from nitre-cake which was in turn a waste product of Nobel's Explosives Company Ltd.

Out of these two facts grew the Portland Glass Company—now an I.C.I. subsidiary—formed in 1921.

Irvine was selected as the site of the new factory for various reasons. Not only was sodium sulphate available there, but also the other main raw materials of glass—sand, limestone, and coal. In addition there was a harbour; and the places from which the main demand for glass bottles was expected to come, namely Glasgow, Edinburgh and Alloa, were all three within easy reach by road.

And so the Portland Glass Company began, with a few hand-operated machines. Today it is one of the best-equipped factories in the glass container trade. The story of Portland Glass is in many respects the story of the struggle to attain that pitch of technical efficiency which is the pride of all who work there.

The first step on the road to technical supremacy was the introduction, within a few months of beginning production, of four American semi-automatic machines. This in turn brought other changes, since it was found that glass made from sodium sulphate was not suitable for the new mass-production methods. Technical difficulties were encountered; and the Portland Glass Company had to switch over to a new raw material in the shape of soda ash imported by ship from Brunner, Mond & Co. Ltd. in Cheshire.

Production consisted mainly of beer and whisky bottles for the home market, but in the late twenties a new trade developed in the supply of bottles for Scotch whisky to America, which involved making glass in both green and amber colours. Because of the many whisky firms engaged in this export business, a large variety of shapes and styles were introduced to catch the fancy of the American consumer. This trade continued at a high level until about 1933, when, as the slump in America progressively worsened, the consumption of Scotch whisky declined.

Once more the Portland Glass Co. turned largely to beer bottles, this time to meet intense German competition, both in price and quality. The German bottles were made of a glass which, unlike British glass at that time, was strong enough to withstand the heat and pressure of pasteurisation. The Portland Glass Company set itself the hard task of beating the Germans in this specialised trade—thereby incidentally expanding the demand for I.C.I. soda ash.

From then on the Portland Glass Company began to acquire an increasing share of the beer bottle export trade—a trade particularly suited to mass-production methods, as large quantities of standard shapes and sizes were required. By 1939 this trade had grown to large proportions, and at the outbreak of war the Portland Glass Company was making fifteen million bottles a year for this purpose.

The war years saw a change in the company's business, particularly so when the normal export trade was gradually cut off, and for a short time the factory went through a difficult period. This state of affairs was soon rectified, however, by the export of beer to H.M. Forces overseas.

Today the Portland Glass Company has settled down to certain lines of production, more or less of a standard nature. There is the large home and export beer bottle trade, including the supply of empty branded beer bottles to various overseas markets; there are wine, cider and mineral water bottles to supply; and there is still the old-established trade with the White Horse Whisky Company, whose bottles have the famous White Horse imprinted on them in vitreous enamel. Finally there is the trade in what are known as bottles for household goods, of which the 'Stergene' bottle is a well-known example. In all these present-day lines Portland glass bottles are of dark green colour—and they are of a quality which none can surpass.



1 A BOTTLE IS PLANNED at the conference table. Here Mr. R. Millar (right), Managing Director of the Portland Glass Company, Mr. V. Bates (centre), Works Manager, and Mr. D. Lambie (left), Works Engineer, are discussing a new style. Many factors have to be considered, particularly appearance, ease of handling and economy of production costs.



2 MAKING THE MOULD which receives the molten glass. Each mould is made in two halves from cast iron, and machined to within a thousandth of an inch. Here the mould is being set up in the forming lathe for boring and cutting (separate moulds are made for the neck). It finally receives a mirror-like finish, which gives the bottle a smooth and shiny surface.



3 AN ENGRAVER CUTS THE LETTERING and design of a bottle in a "finish" mould—a highly skilled job requiring special chisels and cutters. Good maintenance of bottle moulds is very important, because every blemish in a mould is reproduced on all the thousands of bottles made from it. The seams at the joints of the two halves of the mould need special attention.

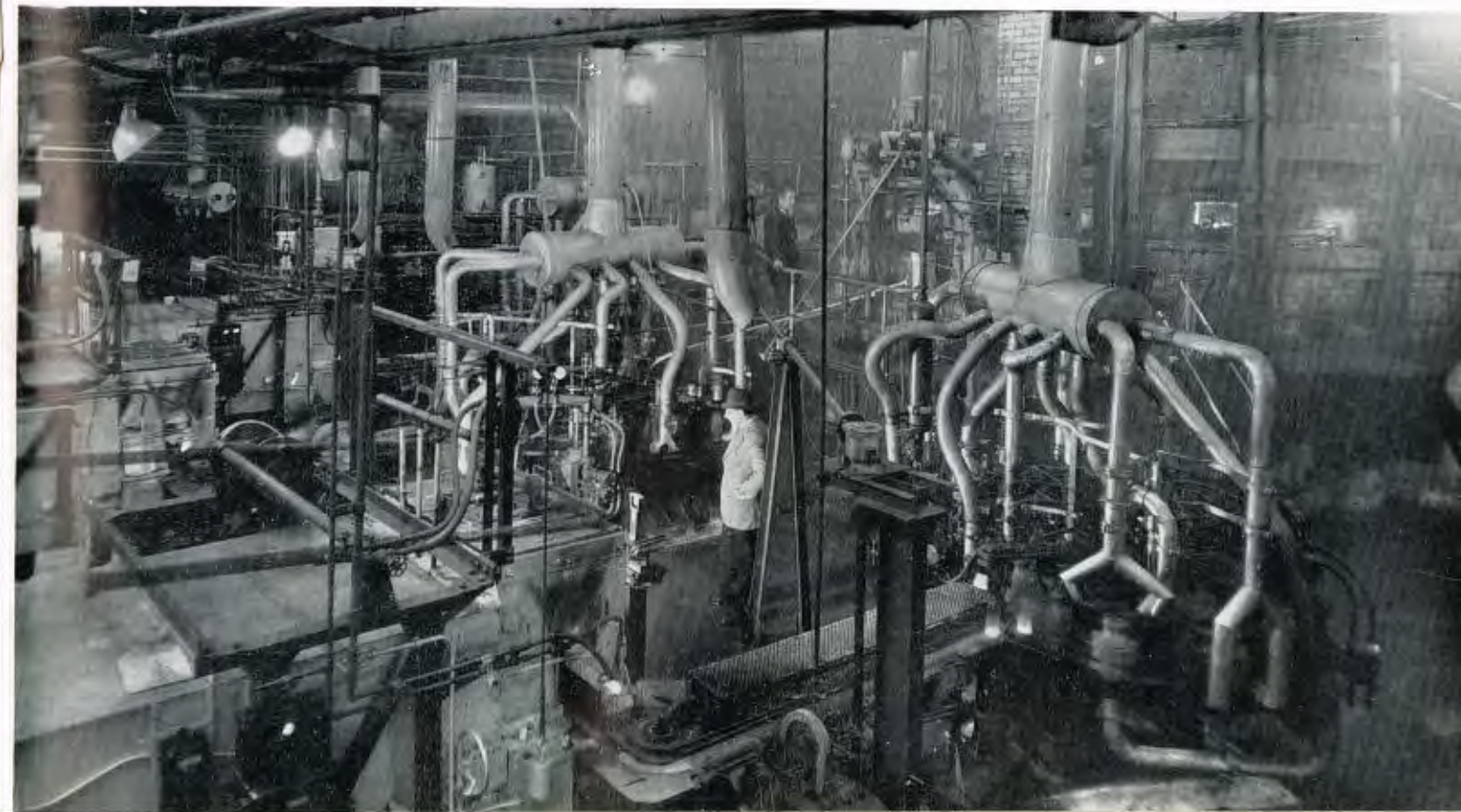


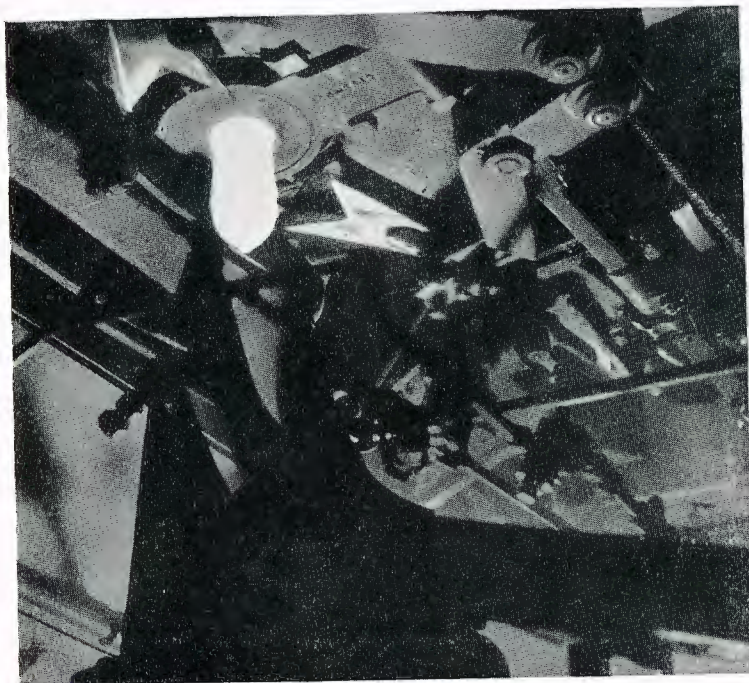
4 RAW MATERIALS OF GLASS are here being tipped into a rotary mixer. The main ingredients are sand, soda ash and ground limestone, to which is added a small quantity of broken waste glass called "cullet." The rotary mixer discharges the "batch" into an elevator which conveys the material to an overhead railway leading to storage hoppers over each of the furnaces.

5 CHARGING THE FURNACE. Holding 130 tons of molten "metal," as the glass is called, at around 1450 degrees Centigrade, each furnace is divided into two compartments, one large to receive the "batches" for melting and refining, and the other small for conditioning the glass before it passes to the feeding machines. The compartments are joined by a bridge which has an air-cooled throat or tunnel in its centre through which the refined glass passes in the course of conditioning. As the machines draw off "metal" at one end of the furnace, fresh "batch" is charged in at the other end to maintain a constant level of glass. The process is thus continuous—bottles being made night and day until, at the end of about two years, the twelve-inch thick refractory blocks of which the bath is made are worn right through, and the furnace must be emptied and rebuilt.

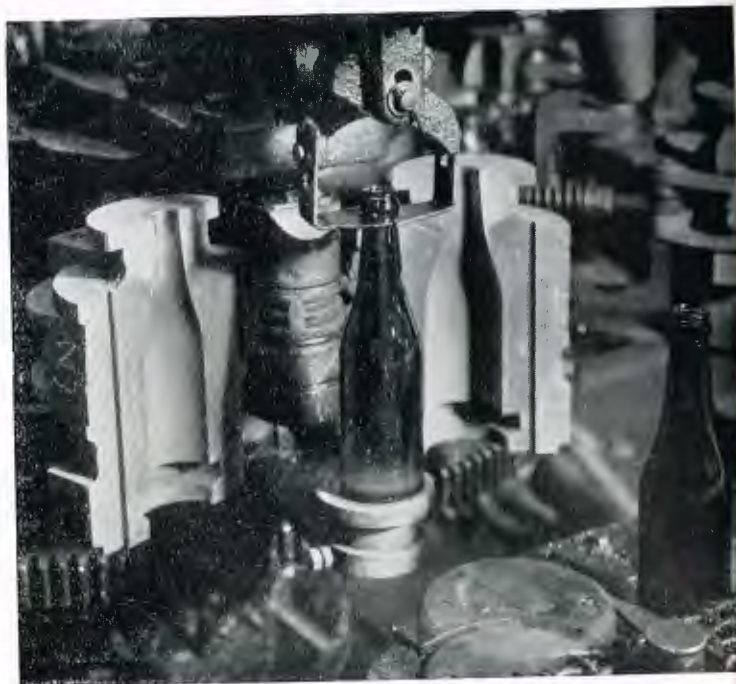


6 A SERIES OF BOTTLE-MAKING MACHINES. The hot conditioned glass from the furnace is first extruded through orifices to form "gobs" of the correct shape and weight for delivery to the bottle-making machines. There are seven stages. (1) Gobs are cut off by mechanical shears and slide down polished chutes into inverted blank moulds. (2) The mould is turned right side up, sealed by a baffle cap at the bottom, and air is then blown through the neck opening with sufficient force to make a hollow core of glass. (3) The glass "parison," as it is called, is now suspended by the neck ring and transferred to the "finish" mould. (4) The glass is reheated and allowed to settle. (5) Air at 15 lb. pressure blows the glass out to the required shape. (6) The bottle is given time to set. (7) With a last gesture of precision the mould opens wide and the red-hot bottle is deposited on a moving conveyor.





7 A "GOB" OF MOLTEN GLASS about to enter a mould in the bottle-making machine already described. The mechanical scissors are just moving across to shear it off. The action of the shears is synchronised with the movement of the bottle machine, so that a "gob" is severed just as a fresh mould comes underneath.



8 A MOULD DISGORGING ITS BOTTLE in the final stage of the bottle-making machine. The bottle is about to move on to the conveyor belt. Although so many operations have been performed by the machine, only twenty seconds have elapsed since the "gob" was cut off from the mass of glass in the furnace.



9 ANNEALING THE BOTTLES. Too-rapid cooling would leave weaknesses in the glass and the bottle might break at any time for no apparent reason. Every bottle is therefore annealed as it passes on the conveyor belt through a thermostatically controlled oven or lehr. This cooling process takes about two hours.



10 VISUAL EXAMINATION FOR FLAWS. By the time bottles reach the examiner they are cool enough to handle, and are scrutinised two at a time in front of a floodlit screen. With a deft flick of the wrists the sorter turns a couple of bottles from "bottoms up" to their right position and checks them for flaws.

11 LABORATORY EXAMINATION. Bottles are taken from production at timed intervals and tested. When checked for annealing through a special lamp (polariscope), a good bottle appears in its true colour, whereas faulty annealing is shown up in various rainbow tints according to the type of strain present in the glass.



12 GIRLS PACKING BOTTLES. Various methods are used for packing finished bottles from wooden crates to loose in special shockproof railway wagons, while large quantities are packed with straw in jute mats for shipment overseas. Special types are packed into cardboard cartons, which is the most secure but also the most expensive way.



13 ENAMELLING WHITE HORSES. An interesting process is enamelling the White Horse on bottles of that renowned Scotch whisky. Girls soak vitreous enamel transfers and fix them to bottles. The transfers are then sponged carefully to remove excess water and air bubbles. When dry, the enamel is fired on to the bottle at 600 degrees Centigrade.



14 RANKS OF BOTTLES with the White Horse fused and moulded into the wall emerge from the lehr. This process takes four and a half hours. The bottles, once reheated to take the enamelling, must again be annealed. Those seen in this picture are all for export, principally to America where the demand for Scotch whisky helps to close the dollar gap.



Information Notes

CHANGING CONDITIONS IN INDIA AND PAKISTAN

Contributed by India Department

With the immense political and economic changes which have taken place in India since the war, it is perhaps of interest to consider how these have affected business conditions.

The first thing which strikes one is that although there has been almost surprisingly little alteration in the pattern and direction of the overseas trade of the sub-continent as a whole, the partition into India and Pakistan has created severe difficulties for the former. India has lost to Pakistan some of the main food grain producing areas, so that she has had to supplement her own insufficient production by large imports from world markets. Furthermore, the main areas producing cotton and jute are now in Pakistan, so that India has not only lost the benefit of these commodities as exports but she has to buy much of the requirements of her mills from Pakistan.

These factors alone would have severely affected her trade balance, but added to these her ambitious plan for industrialisation necessitate heavy expenditure on the import of capital goods. The results might have been disastrous if it had not been for one important asset which she has been able to use as a buffer.

During the war Britain contracted a very considerable debt with India in respect of goods and services supplied by India to the Allied war effort; this debt changed India from her long-standing position as a debtor to a creditor country, and by 1946 her credit balance with Britain stood at nearly £1,300 million. Despite our own difficulties, Britain has agreed to India drawing very substantially against these balances, which has enabled her to finance her imports. But these balances will not last for ever. India has, therefore, severe problems to face in order to balance her trade in the future, which must involve increasing her food production and her exports.

With the constitutional changes the Indian has not only gained in national confidence but has largely lost his bitter feelings against "British domination," and there has been comparatively little evidence of serious discrimination against the foreigner. At the same time, independence has brought some unpleasant shocks. First, the heavy strain on the comparatively inexperienced administration has shown itself in all manner of delays and in changes of policy, which have caused frustration and consternation in the business world. Second, the Indian Government has shown a very close interest in the organisation and supervision of trade and industry. This is only to be expected, and has its parallel in other countries, but the degree of interference with private enterprise seems to have come as a far greater shock to the Indian businessman than to his British counterpart, and he is now demanding to know what are the limits of state interven-

tion before entering into further commitments. These two factors have led to some depression and stagnation among Indian industrialists.

British business has, on the whole, shown itself more adaptable to post-war effects, and has succeeded in maintaining its position. Many of the leading managing agency



A map of the continent of India, the shaded portions showing Pakistan

firms foresaw the advisability of converting themselves into public companies and bringing Indians and Indian capital into participation. This not only fell in with Indian national sentiments but enabled the British concerned to repatriate some capital at a difficult time. New British enterprises find it virtually essential now to enter into some form of partnership with Indian interests. Furthermore, British business firms have shown a steadfastness in meeting difficult conditions which has evoked admiration among many Indians, who thought the British might well abandon their faith in India. Lastly, India's use of the sterling balances and her shortage of hard currency have helped to give British goods continued preference.

One of the most significant developments of the last eighteen months has been the more liberal attitude towards foreign, and particularly British, enterprise. Two factors have

perhaps contributed most to this change of heart: first, the recognition of the stability of British business in contrast to the Indian nervousness and the American policy of "quick profits and get out"; second, the shortage of investment capital from Indian sources.

The second is a most important and serious factor, since if capital is not forthcoming from the Indian public to assist in the financing of new projects, the whole industrialisation programme will be held up and a dangerous period of frustration will set in. Much of the trouble lies in the fact that the substantial redistribution of income which has taken place since the war has taken money away from the wealthier classes who were accustomed to invest, and placed it in the hands of those whose small earnings formerly did not permit much saving, and who now probably hoard their savings and do not trust or understand investment. Some way must be found of releasing this capital. Other contributory causes are that heavy taxation of company profits has left small margin for reinvestment; and that the princes, who used to be a big factor in promoting industrial enterprise, have now lost control of much of their former wealth and have largely withdrawn from the scene.

One final economic factor must be mentioned which is tending to alter the old pattern of trade. When the partition of Pakistan and India took place it was hoped that a large measure of economic co-operation would continue, so that the complementary needs of the two new countries could be met. Unfortunately political events have caused a bitter barrier between the two, which has suspended much of the natural trade and given rise to an intense economic nationalism, with each country seeking alternative sources of supply and markets. This tendency was further increased by the different policies over devaluation when India devalued her currency and Pakistan did not. There has been a slight rapprochement recently, but the bitterness is deep rooted in history, and until at any rate the Kashmir issue is settled it is doubtful if genuine economic collaboration will be possible. Meanwhile the natural course of trade is disrupted, to the disadvantage of each party.

The importance of India to I.C.I. does not need stressing, since it has been, and in the long run is likely to remain, our largest single export market. In conclusion, therefore, let us see how far the above general factors have affected I.C.I. interests.

First, in its merchanting activities, I.C.I. (India) Ltd. has, in spite of India's economic difficulties, not only maintained but substantially increased its turnover in I.C.I. and outside agency products. It has always employed a large number of Indians, and the percentage attaining responsible staff positions has steadily grown since the war.

Second, on the manufacturing side, the Alkali and Chemical Corporation of India, in which I.C.I. (India) Ltd. holds a substantial interest, is, with I.C.I. technical assistance, greatly expanding its production in India and widening its range of products, which now includes 'Gammexane.' Partition of the country has, however, meant that the Khehra soda ash factory is in Pakistan, and after having its activities dislocated by the post-partition disturbances, it is now deprived of its natural market in north-west India by political trade barriers.

Third, I.C.I. has continually kept under review the possibility of local manufacture of various products in India, apart from those being undertaken by A.C.C.I. A small paints factory is now being built by I.C.I. (India) Ltd., and dis-

cussions have recently been taking place with the Indian Government regarding the manufacture of blasting explosives. On the other hand, the proposed scheme to manufacture dyes in conjunction with the great Indian firm of Tata Ltd. has been abandoned, largely owing to the unpropitious state of the Indian investment market. The progress of future development may well depend on the degree of assistance forthcoming from Indian capital and the willingness of India to guarantee satisfactory remuneration for those like I.C.I. who can give her the technical assistance she so badly needs.

NEW CHEMICALS IN AGRICULTURE

Contributed by Plant Protection Ltd.

The recent deaths in Yorkshire of two men who were engaged in spraying against weeds has caused widespread public attention to the dangers of certain chemicals which science has recently made available for the control of those enemies of the British farmer—pests, diseases and weeds.

The Ministry of Agriculture convened a conference in London on 11th July to discuss measures necessary "to ensure the safety of persons handling dangerous chemicals used in agriculture." This conference, which embraced all interested parties, decided to set up a working party to make recommendations to the Ministry on the adequacy of existing precautions for the handling of dangerous materials and to



The Carved House, Gay Street, Bath, built in 1762 and well known to Dr. Johnson and his friends, now Western Region Office of Plant Protection Ltd.

advise whether any restrictions should be placed upon the sale of certain of them.

There can be no doubt that this was a wise step to take, but, as so often when there is a public scare, there is a risk that the question may get out of perspective. For example, it is quite incorrect to suggest that *all* the selective weedkillers introduced in the last ten years are dangerous chemicals. 'Agroxone,' the Plant Protection product of which enormous quantities have been used by the British farmer during the past five years, is free from any serious risk to users. The chemical weedkiller that requires extreme care in handling is dinitro-ortho-cresol, commonly called D.N.O.C. This is especially so in hot weather, when operatives have a strong temptation to discard the necessary protective clothing—this indeed may have been the cause of the two deaths in Yorkshire above referred to. Not only are there great risks of poisoning from D.N.O.C. but, although experimental work on the medical side has been going on for some time in the United States and this country, there is no recognised antidote in general use by the medical profession.

Even though D.N.O.C. provides a control of a few important weeds not killed by any other chemical, Plant Protection Ltd., for the time being, has decided not to offer weedkillers based on this material.

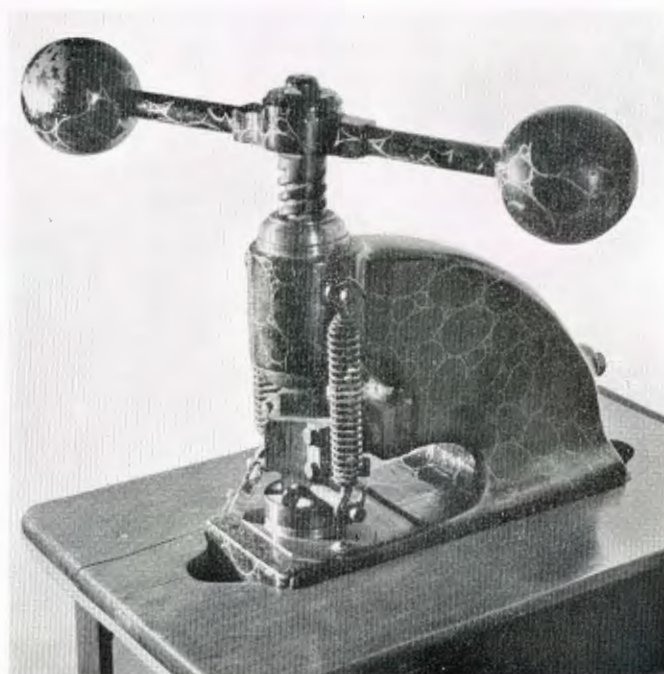
Turning now to insecticides, we have in D.D.T. and 'Gammexane' two chemicals of very wide application against insect pests which are nevertheless relatively harmless to warm-blooded animals. The fact that they can be used with safety to operatives must not be forgotten in the anxiety which has arisen over the toxic properties of the new phosphorus insecticides. Of the latter, parathion is one offered by several British firms. This insecticide is particularly efficient in controlling red spider, a pest of considerable economic importance and one which other new insecticides (D.D.T. and B.H.C.) have in a sense encouraged, since they destroy some of the predators which under natural conditions would attack the red spider. On hops and fruit the red spider is a major problem, and we in Plant Protection Ltd. foresee a considerable demand for the parathion mixture which we market under the title of 'Fosferno.' We have taken a great deal of care to impress upon all users the vital importance of complying exactly with our directions for using 'Fosferno' and we are glad to say that neither with our product nor any other phosphorus preparation in this country has there been a fatality.

Before the new organic chemicals came into being, remedies such as nicotine and arsenic, both highly poisonous, had been used safely for many years in agriculture. As with petrol and other dangerous substances in current use, widespread public familiarity with the nature of their properties has in practice bred care and not contempt. There is no reason to suppose that the farm and market garden employee, once familiar with the properties of the new organic chemicals, cannot successfully master the procedure necessary to ensure their safe handling.

I.C.I. SECRETARY

Contributed by I.C.I. Secretary's Department

One of the outstanding secretaries of modern times, Lord Hankey, has written "There is much resemblance between the position of wicket-keeper and secretary. Mistakes by either are apt to prove costly; both have to be prepared for hard knocks and both see a great deal of the game." Just as a wicket-keeper does more than stop the ball which the bats-



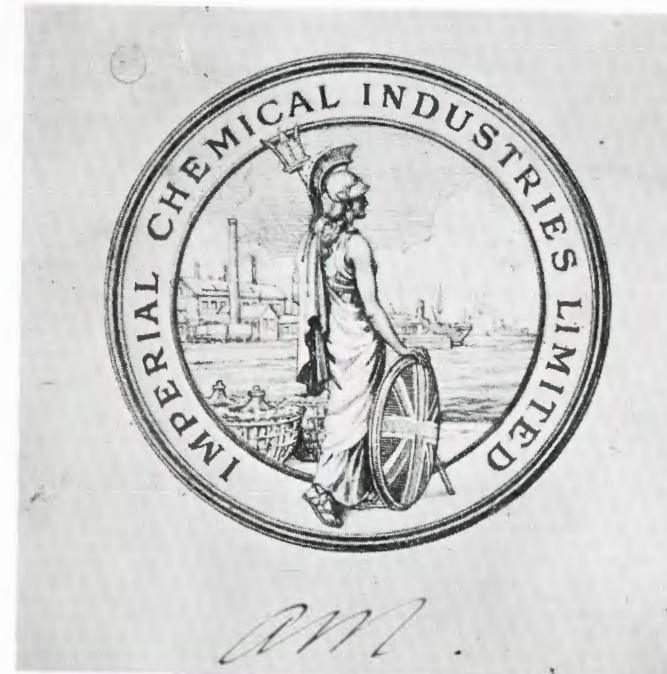
The I.C.I. Common Seal, which is kept at Nobel House

man misses and return it to the bowler, so has a company secretary many other duties than those of attending board meetings and writing minutes.

I.C.I. Secretary's duties can be grouped broadly under three heads—his duties as a company secretary, his duties as a general administrator, and his duties as head of a service department to which have been allocated such matters as Head Office central filing, an advisory service on estates affairs, and the supervising of the Company's interests in relation to new legislation.

As a company secretary—and by law every company is required to have a secretary—I.C.I. Secretary is responsible for seeing that the Company fulfils its obligations under the Companies Act and the Company's memorandum and articles of association, for the detailed mechanism by which the board works, and for all the Company's communications with its stockholders as such. Thus the Stock and Share Department, in the charge of I.C.I. Registrar, is responsible to the Secretary for keeping the statutory books (other than accounts) of the Company and for registering all transfers of the Company's stock, the payment of dividends, and the preparation and filing of the various returns which have to be made to the Registrar of Companies. When it is realised that the Company has approximately a quarter of a million stockholders and that on the average over £600,000 worth of stock changes hands every month, it will be appreciated that the lot of I.C.I. Registrar is not an easy one.

So far as the board is concerned, the Secretary must be ready at all times to attend the members of the board at the principal place from which the board operates; he is responsible for seeing that matters calling for consideration by the board are properly presented and supported by documents as may be necessary to enable the board to deal with the business before them with efficiency and despatch; and he is responsible for recording and notifying the board's decisions, so that proper effect may be given to them.



A photograph of the artist's drawing for the Company's seal, showing initials of approval of Alfred Mond, I.C.I.'s first chairman

Another interesting duty of the Secretary arises out of the sealing of documents, for sealing is the method by which the most important obligations are entered into and evidenced. The secretary is responsible for the safe custody of the Company's seal and for its correct use, and the directors rely upon him to ensure that all documents presented for sealing are in proper form and that every sealing has been or will certainly be authorised by proper board authority.

The Secretary also has a roving commission over the whole of the Company's formal organisation, and with his central position and close contact with the board he is in an ideal position to watch the administrative machine. He is there to give timely advice to departments in accordance with the policy of the board and to arrange for necessary action to be taken in order to correct maladjustments in the organisation, particularly those caused by lack of co-ordination. In all large organisations there is a wide field for the free-lance administrator who knows his organisation in detail, who is able to co-ordinate matters falling within the activities of more than one department, and who knows when the administrative machine can be short-circuited and when established procedures must be followed.

In addition to the duties already described, which in general will fall to the lot of all company secretaries, there are certain miscellaneous duties which have been allocated to I.C.I. Secretary. He is responsible for I.C.I. Estates Department, the Central Registry, and a Legislation Section, and for the co-ordination of I.C.I.'s interests in trade associations, learned societies, and such bodies as the British Standards Institution, and for the handling of charitable appeals and donations. The Estates Department is a central service department which, in addition to the estate management of Head Office and Regional properties, gives advice to Divisions and others on estate matters, including questions of town and country planning which now so vitally affect the Company's operations. Central Registry handles the filing of the majority of the Central

Service Departments. The Legislation Section is responsible for the examination of all parliamentary bills and statutory instruments with the object, in consultation with Divisions and others, of making representations to the proper authorities.

To sum up the Secretary's duties, he is an expert in a particular field, similar to the lawyer and the accountant in theirs; he must be a reliable consultant on all matters affecting the constitution and powers of the board; he must have a wide knowledge of the Company's affairs, and he is the custodian of the accumulated knowledge and official practices of the Company's formal business; finally, he must be the trusted adviser of the board to whom each member may turn with confidence.

PLASTIC PACKAGING FOR CARS

Contributed by Plastics Division

'Alkathene' film two-thousandths of an inch in thickness is being used experimentally by the Austin Motor Co. Ltd. of Birmingham for the packaging of cars exported to Australia. Each car takes about 28 square yards of film. A photograph of a car packed in the film was published in the last issue of the *Magazine*. There was an account of the discovery of 'Alkathene' at Winnington in 1933, and of its many uses, in the April *Magazine*.

The 'Alkathene' film envelope weighs only 2½ lb. and therefore adds very little extra weight to the crate. At the same time the car is fully protected against the effects of the high humidity experienced in the holds of ships passing through the tropics and also from the corrosive action of salt spray when cases are stacked on deck. In the past it has been a common experience for motor manufacturers to be obliged to carry out expensive and time-taking renovation to bodywork and upholstery which arrives at its destination showing mould growth promoted by high humidity and high temperature.

The technique for packaging the Austin car was developed by the technical staff of Plastics Division working in close collaboration with Austin engineers. In general, the method adopted entailed four main stages:

1. A wooden board to form the base of the case on which the car was bolted down was first covered with a large sheet of film, made by sealing edge to edge two widths of standard material 46 in. wide to form a piece about 65 in. in width and roughly 150 in. in length.
2. The car, minus wheels, was then placed on this board and securely bolted down. 'Alkathene' washers were used to seal the bolt holes and 'Alkathene' adhesive tape employed as an additional precaution to prevent the moisture getting in.
3. A much larger sheet of 'Alkathene' film, made by machine-sealing edge to edge four widths of film, was prepared, placed over the entire car and trimmed to fit the base so that a two-inch hem was left round the edges. This hem was sealed, using a hand heat sealer and protective polytetrafluoroethylene tape on the jaws of the sealer. Faster mechanical methods are planned when large-scale packaging is carried out.
4. The packaged car was then crated in the usual way. To absorb the small amount of residual moisture in the envelope, and also to take up any traces of moisture permeating the film during transport, a canister of silica gel is placed inside the car.



Spooling 'Luron' at the Sutton factory of Paper Goods Manufacturing Co.

'LURON' CASTS AND LINES

Contributed by Plastics Division

Plastics Division first introduced nylon in 40 in. lengths for fishing casts early in the war, at about the time of the curtailment of supplies of silkworm gut and gut substitute. Though this timing brought certain advantages, it also created a marketing problem. The conservative fishing fraternity tended to regard nylon as a substitute for (and therefore inferior to) conventional materials rather than as a successor to and improvement on them. A mere recital of the superior qualities of nylon was not enough to overcome the prejudice.

Nylon has a greater wet tensile strength than gut; it is solid throughout and will not fray or split; it has less sheen and is therefore less visible in water; and it can be tied and cast dry. All these advantages were announced to anglers in magazine advertisements and they bought nylon casts—but as a substitute for the gut they knew and favoured and couldn't get.

However, this unfavourable attitude did not last. Fishermen found that nylon really had the advantages claimed for it and was, moreover, cheaper than the materials it had replaced. It was therefore a welcome day when Plastics Division was able to add nylon lines to the casts and so introduce the range of tackle for which the trade mark 'Luron' was adopted.

One difficulty remained. Fishermen found that the knots they had used for years, unless tied perfectly, slipped when used with 'Luron,' and thus sometimes all the advantages that the new material brought were nullified. New knots and variations of the old had to be devised and anglers taught that only a perfectly tied knot was suitable for use with nylon.

The instruction of fishermen in knots and knot-tying was carried out both through magazine advertisements and by means of a Plastics Division publication, " 'Luron' for Angling." In this booklet experts in various branches of angling present articles which discuss the merits and disadvantages of 'Luron' and recommend knots for use with the material. " 'Luron' for Angling" became a best-seller.

NEW SHOTGUN POWDERS

Contributed by Nobel Division

An important problem tackled by the Research Department of Nobel Division in recent years has been the development of new shotgun powders produced at substantially lower cost than those in current production. These powders are of particular importance to the Metals Division to enable them to maintain their trade in the highly competitive export market for shotgun cartridges.

Some of these new powders have reached full production, some the pilot plant scale, while others are still at the research stage. To date, most experience has been gained with Nobel Powder No. 52, designed as a replacement for 'Smokeless Diamond.' Produced at Ardeer throughout 1949 on the scale of two tons per week, it has now been used at Metals Division to load over 30 million 12-bore 'Grand Prix' cartridges. Results have been very satisfactory.

During 1950 the issue of this powder will be extended to other factories loading shotgun ammunition in this country and in Eire. Before the end of the year production of 'Smokeless Diamond,' which has held the field as one of the best shotgun powders since 1910, will probably be entirely discontinued. This will be a big step towards keeping costs down, as owing to the effect of devaluation on the price of cotton, the price of 'Smokeless Diamond,' which requires about $\frac{1}{2}$ lb. of cotton per pound of powder, would inevitably have risen.

Nobel Powder No. 52 is one of a complete new range of shotgun powders designed ultimately to replace all existing types. Designated Nos. 55-69, the successive numbers in the series represent progressively decreasing ballistic speed. So far Nobel Powders Nos. 60, 62 and 64 (corresponding ballistically to 'Smokeless Diamond,' Modified 'Smokeless Diamond' and 'Neoflak') have reached the production stage, and quantities have been despatched to New Zealand, Australia and Uruguay. In addition Nobel Powder No. 64 is now being loaded by the Metals Division in shotgun cartridges for sale in U.S.A.



(Photo: The Scotsman)

The village of Torphins, Aberdeenshire, and surrounding country areas typical of the territory served by this I.C.I. subsidiary

SCOTTISH AGRICULTURAL INDUSTRIES LIMITED

By Howard Cunningham (Managing Director)

USUALLY known by the abbreviation S.A.I., Scottish Agricultural Industries Limited, an I.C.I. subsidiary, is far and away the largest agricultural merchanting company in Scotland. It employs 3000 people and its turnover is of the order of £12,500,000 annually. Its activities cover practically the full range of the farmer's requirements. While its main business is the manufacture and sale of fertilizers, it also engages in the animal feeding stuffs trade; the seed trade; the oatmeal trade; the manufacture, sale and servicing of implements and machinery; the sale of pesticides and veterinary products; and the buying and selling of farm produce.

The chief feature that distinguishes S.A.I. from other I.C.I. subsidiaries is that it engages in direct retail trade, both selling to and buying from farmers as well as merchants. Its sales include not only products manufactured in Scotland by S.A.I.,

but also those of I.C.I. and Plant Protection. For this purpose nearly 130 S.A.I. agricultural representatives come into direct contact with the farming community. Purchases from farmers are considerable. They comprise large quantities of farm produce, mainly grain and potatoes.

S.A.I. was formed in 1928 by I.C.I. in association with five of the oldest-established and largest companies at that time engaged in the fertilizer and agricultural merchanting trade in Scotland. These five companies were: J. and J. Cunningham of Leith, Dundee and Berwick; A. Cross & Sons of Glasgow; C. Tennant & Co. of Carnoustie; John Miller & Co. of Aberdeen, and D. Wyllie & Co. of Ayr.

Through these old connections and those of other companies which have since joined the merger, S.A.I. has a trading office in each distinctive farming district; and factories, workshops, mills, granaries and stores at points from Wick in the north-east



Unloading North African phosphates at the Glasgow docks



A typical Ayrshire cow



A highland bullock

to Berwick-on-Tweed in the south-east, and across to Stranraer in the south-west.

S.A.I. is the second largest producer of superphosphate in the United Kingdom. In 1949, from six works situated at Aberdeen, Dyce, Carnoustie, Leith, Glasgow and Ayr, over a quarter of a million tons were produced, which, after meeting the needs of Scottish farmers, provided a surplus for export to England and Northern Ireland of 75,000 tons. Apart from superphosphate, the principal other fertilizers produced are compounds containing phosphate, nitrogen and potash; ground mineral phosphate; sulphate of ammonia; and ground basic slag—the last in two plants at steel works in Scunthorpe, Lincolnshire and Skinningrove, Yorkshire.

As an example of our manufacturing range the factory situated at Sandilands, Aberdeen, might be mentioned. There, in addition to the manufacture of sulphuric acid and fertilizers, are produced white fish meal, which provides high-quality protein; also mineral mixtures containing calcium, phosphorus, sodium chloride, iron, cobalt and iodine, all essential in the nutrition of livestock; and tar and its derivatives. In addition special fertilizers such as cobaltised superphosphate for sheep pastures are produced at Sandilands.

Another very important aspect of S.A.I.'s trade with the Scottish farmer is the supply of balanced feeding stuffs—a trade in which one of the merger companies were pioneers as far back as 1866. These feeding stuffs are compounded from home-produced grain and imported cereals and oilseeds (such as cotton, linseed and groundnuts).

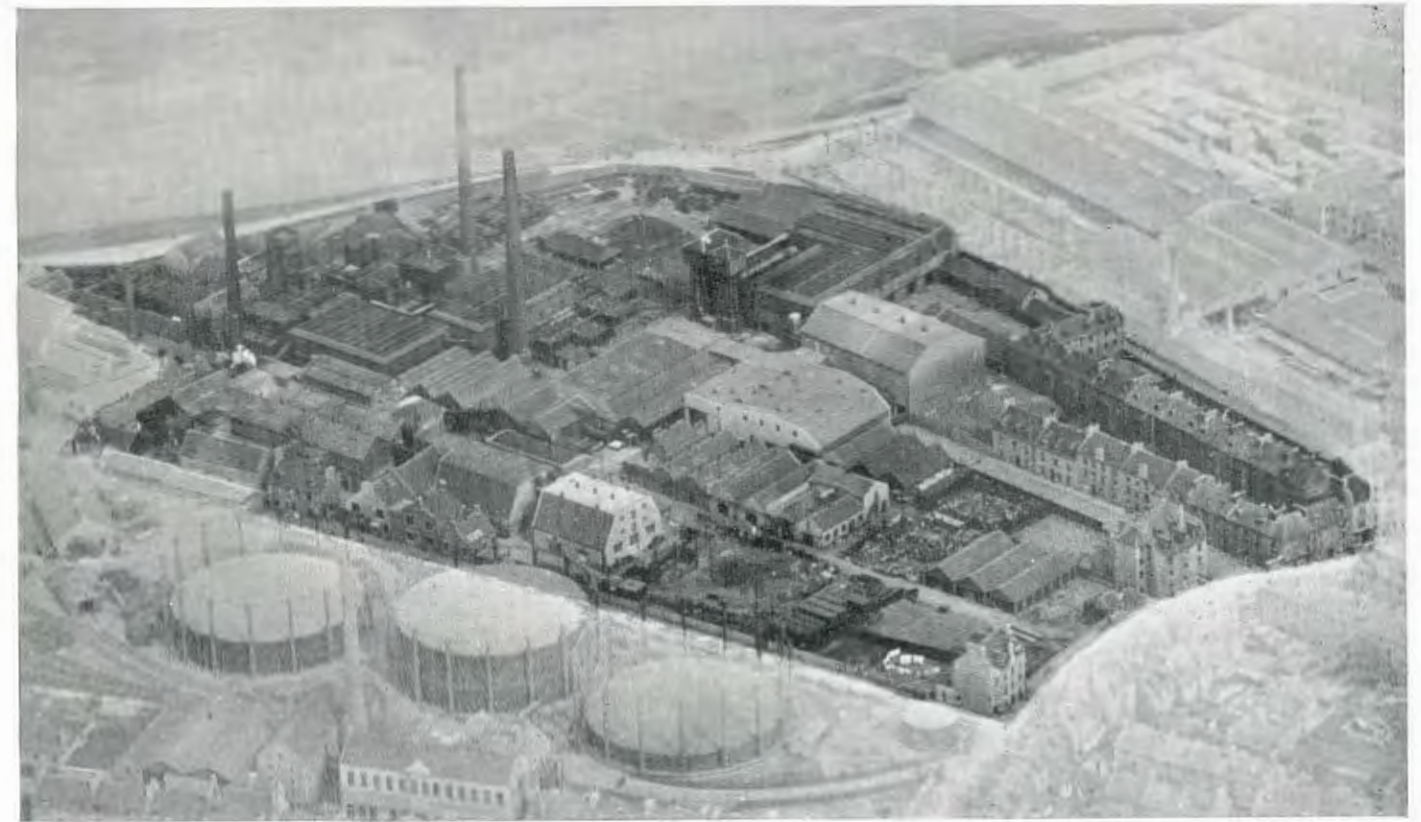
S.A.I. now has three main feeding stuffs processing centres in Scotland, at Glasgow, Leith and Aberdeen. These plants produce compound foods of the highest quality, and are able by reason of their strategic situation to give a prompt delivery service which ensures that supplies, when they reach the farm, have that factor of freshness so necessary in animal as well as in human foods.

In addition to processing and marketing "straight" and compound feeding stuffs for the ordinary classes of livestock, such as cattle, pigs, poultry and sheep, specially balanced mixtures are produced for feeding to rats and guinea-pigs, thousands of which are required annually for medical and veterinary research purposes.

All the world has heard of the Ayrshire dairy cow, but it may not be generally known that the climate and soil of the eastern seaboard of Scotland is particularly suited to the production of oats, barley, wheat and potatoes. Accordingly it will be readily understood why, with granaries or stores situated at Invergordon, Inverness, Burghead, Peterhead, Macduff, Aberdeen, Montrose, Dundee, Leith, Kelso and Berwick-on-Tweed, S.A.I.'s trade in grain and potatoes is considerable.

Oats are disposed of either by processing into oatmeal in the Company's own mills or as feed for livestock or, if of seed quality, to farmer buyers and merchants in England, Ireland and Wales. Wheat is mainly disposed of to flour millers, and barley to brewers and distillers. In addition to grain, S.A.I. is actively engaged in opening up a trade in seed potatoes with English merchants and overseas buyers, mainly in the Near East and South Africa. I.C.I.'s overseas branches and associate companies are lending valuable assistance in this development. By purchasing quantities of his grain and potato crops and finding markets for this produce in other parts of the British Isles and overseas, S.A.I. performs a valuable service for the Scottish farmer.

Plants and animals, like men, have their enemies. As with men, in the fight against disease science has come to their



An aerial view of the Sandilands factory near Aberdeen, where fertilizers are manufactured

rescue, and crop and livestock yields are substantially increased by the control or eradication of weeds, insects and parasites. S.A.I.'s part in this comparatively new but increasingly important service to agriculture is that of sole marketing representative in Scotland of Plant Protection Ltd. and of the agricultural products of the General Chemicals and Salt Divisions. S.A.I. through its own branches handles the main agricultural products, such as 'Agrosan,' 'Agroxone,' 'Cymag,' 'Chloros,' 'Gamexane,' 'Phenavis' and mineral licks. A wholly owned subsidiary company, the Neptune Mills, specialises in meeting the requirements in pesticides of horticulturists, nurserymen, market gardeners, golf and other sports clubs and local authorities.

One special S.A.I. interest in this field is worthy of record—the development of the use of sulphuric acid for crop spraying. This was begun in Scotland in 1933 for the control of charlock and other weeds in cereal crops, but has since been largely displaced for this purpose by the introduction of 'Agroxone.' The main development has been in its use on the potato crop, and three advantages are claimed. If the foliage is sprayed when the crop has reached the stage of maturity to give the maximum yield of seed-size potatoes, further growth is stopped, and lifting of the crop can be carried out to suit the grower's convenience. Second, the acid kills blight spores, and thus saves infection at lifting time. Third, mechanical lifting is made easier by the disappearance of the potato haulms, which the acid completely destroys.

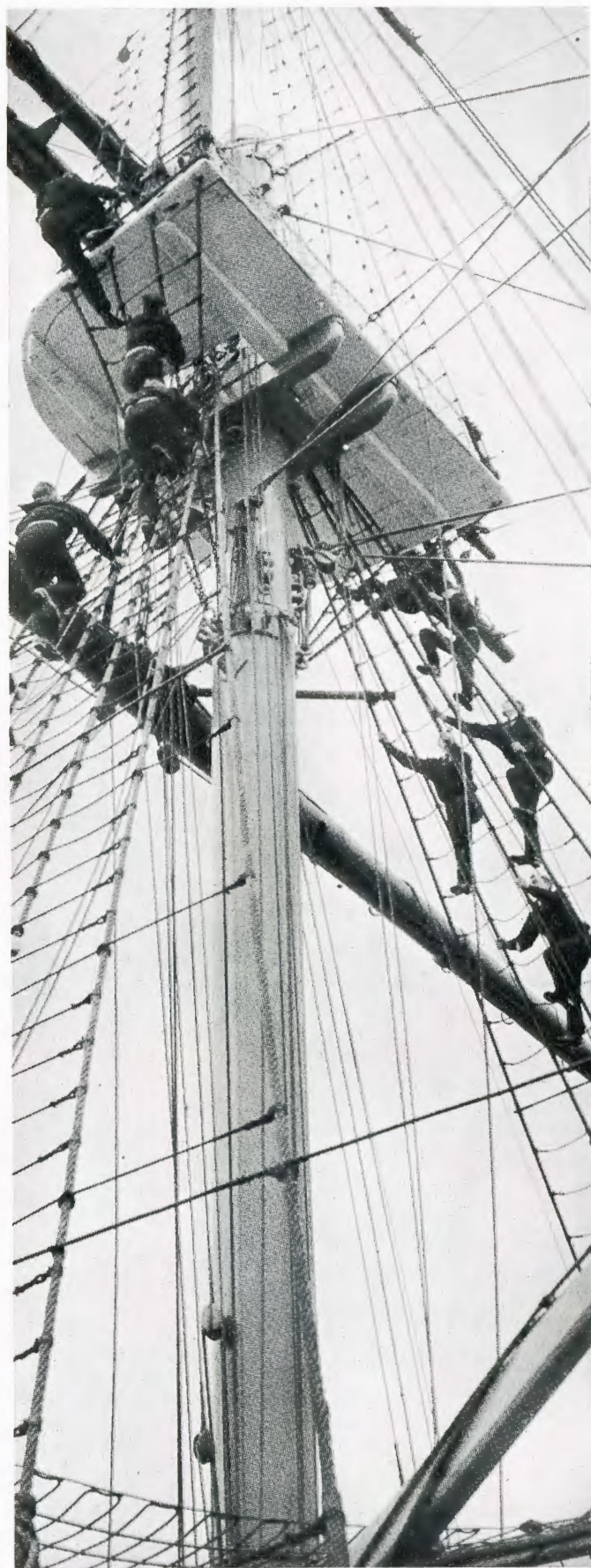
No description of S.A.I. would be complete without mention of its interests in the agricultural implement, machinery and small seed, i.e. grass, clover and root seeds, trades. These are handled largely by a wholly owned subsidiary company, Barclay, Ross and Hutchison. While farm implements and small seeds may appear, in a business, to be strange partners,

the marriage was originally one of convenience. When this subsidiary was young, activity in the small seed trade lasted little more than six months in the twelve. It was necessary to find some other trade to occupy the remainder of the year. The choice fell on what, at the time, was an old but freshly expanding industry, namely implements and machinery. Apart from selling seeds and certain items of farm equipment fabricated in their own workshops, Barclay, Ross and Hutchison hold agencies for some of the best-known tractor, machinery and implement manufacturers.

After-sales service is important to the farmer, and to meet this need this Company operates repair workshops alongside their sales offices in Aberdeen, Forfar and Perth. Another wholly owned subsidiary, Wm. Reid (Forres) Ltd., maintains a sales and service depot at Forres, Morayshire, and S.A.I. operates in its own name a depot at Haddington in East Lothian.

The level of success attained by S.A.I. depends in large measure on the level of prosperity achieved by Scottish agriculture. Any development, therefore, practical or scientific, that raises the standards of good husbandry, with a consequent increase in the prosperity of agriculture generally, is bound in the end to be of benefit to S.A.I. It is with this far-sighted policy in mind that S.A.I. has found it desirable to have at its command a well-qualified agricultural technical service staff.

The vital necessity, due to causes such as the dollar shortage arising out of the war, for Britain's agriculture to produce the maximum amount of food has been continually stressed, and the Government has lately set the industry the task of raising its output to 50% above the 1939 level. Scottish agriculture is playing a notable part in the accomplishment of this task, and S.A.I., by reason of its unique range and scale of activities, is making an important contribution.



Cadets in the rigging of H.M.S. Worcester

SINCE it is known that my job in the Company brings me into day-to-day contact with all the main merchant shipping lines, it is natural that I find myself continually being approached by persons in I.C.I., known and unknown to me, who seek my advice in the matter of sea-going careers for their sons, and—believe it or not—sometimes for their daughters as well!

This article confines itself entirely to particulars of the opportunities available in various branches of the Merchant Service afloat and does not deal with entry into the Royal Navy. I do not propose, either, to say any more for the benefit of sea-minded daughters than this: any worth-while job as a stewardess requires a nurse's training beforehand; apart from that, there *are* a very limited number of other jobs for ladies afloat (hostesses, shorthand-typists, telephone operators, beauty specialists and shop assistants), but these are confined to ships in the crack luxury class, such as the "Queens" and a few others.

And so to the more serious aspect of our sons. The Merchant Navy has continual openings for fit and suitable youths who wish to follow sea-going careers in any of the following capacities: Navigating Officer, Engineer Officer, Radio Officer, Deck Rating, Fireman, Steward and, last but not least, Ship's Cook. In these days it is by no means impossible for a lad starting as a deck rating to become a master mariner, provided he has the personality and ability to pass the necessary examination. By the same token chief engineers have, in certain cases, begun their careers as firemen. In fairness I must add that I have never *heard* of a ship's cook becoming anything other than a ship's cook!

First and foremost, I should emphasise that the standards of physical fitness for entry into *all* departments of the Merchant Navy are very high. Those who wish to *serve* on deck should also make certain *before they start training* that their eyesight is up to the standard required by the shipping industry. This provision is now usually taken care of by the sea training establishment authorities before an applicant is admitted, but *officially* the Ministry of Transport's standard of form vision—not so rigid as that required by the shipping industry—is acceptable for initial entry. I stress this point because I know, personally, several cases of keen and promising boys who have completed their nautical training in ignorance of the fact that their sight, though up to normal Ministry standard, is not quite good enough to qualify them for deck jobs at sea. It is better to be sure at the right time than sorry when it's too late: so do satisfy yourself that the initial eyesight test is indeed in keeping with the up-to-date standard required.

Assuming that your sea-minded son shows every sign of passing these physical qualifications, perhaps you would like a few essential details regarding entry into those various

Should I Send My Son to Sea?

By Ronald Farquharson (I.C.I. Shipping Manager)

branches of the Merchant Navy which I have previously mentioned.

Navigating Officers. The normal and probably the best course for those to adopt who wish to qualify as navigating officers is also, perhaps unfortunately, the most expensive one. The well-known training ships H.M.S. *Conway* and H.M.S. *Worcester* and the nautical college at Pangbourne are the best known of the nautical residential schools in which embryo officers for the Merchant Navy are generally trained.

H.M.S. *Conway* (now moored off the coast of Anglesey) admits boys between the ages of 13½ and 16½ with fees amounting to £200 per annum. H.M.S. *Worcester* (moored in the Thames) admits boys between the ages of 13½ to 15, with fees at £180 per annum. The length of course in both these training ships is a minimum of two years, and in each case the main items of uniform are supplied free. The nautical college at Pangbourne (Berkshire) admits boys between the ages of 13 and 14 inclusive: the length of course is three to four years and the fees amount to £220 per annum.

There is also the School of Nautical Training—*Mercury*—which is classed as a secondary school and is situated at Hamble, near Southampton. This school admits boys between the ages of 13 and 15 for a two-year course at a cost of £95 per annum. And the School of Navigation at University College, Warsash, near Southampton, admits boys at the age of 16 for a course lasting a year at a fee of £154.

A boy may similarly qualify for some remission of the necessary four years' sea service (before sitting for his Second Mate's ticket) through attending cadet courses at technical schools and similar institutions which exist in Aberdeen, Cardiff, Hull, Glasgow, Greenock, Leith, Lewis, Liverpool, London and South Shields.

Boys attending training ships and nautical schools are usually given the opportunity of stating their preference for employment by an individual shipping company soon after entry. Generally they are asked to state two or three alternatives and the establishment concerned advises the appropriate shipping companies accordingly. Unless a boy happens to be dogmatic over joining one particular shipping company which happens to have a formidable waiting list, there is normally no delay in his appointment as a cadet within a month or two of his completing his training ship or nautical school course.

Cadets at sea have been referred to elsewhere as representing the lowest form of animal life and are liable to be given the lowest of tasks to perform accordingly. They are also required to spend as much time as possible studying for their subsequent examinations. In foreign-going ships a cadet must first qualify as Second Mate; on promotion he must progressively pass as First Mate, and then as Master. In the larger companies it will be found, in all probability, that even the junior navi-

gating officers are already in possession of a master's ticket.

Finally, it might be as well to note that "the lowest forms of animal life at sea" receive no official pay. They are, however, given a limited amount of pocket money at the captain's discretion if they behave themselves!

As regards pay generally, the National Maritime Board has laid down a minimum scale for navigating officers. As examples: a Second Mate serving in an average cargo carrier of 7000–9000 tons starts at £34 per month, a Chief Officer at £42 per month, and a Captain—depending on length of service—between £650 and £900 a year. The majority of prominent steamship companies, however, pay their officers above the N.M.B. minimum, and of course in vessels of larger tonnage the rates of pay are proportionately higher, and in large passenger-carrying liners again they are considerably increased.

Before disposing of the Navigating or Deck Officer category I might as well answer a question which is frequently put to me and which concerns the possibility of a boy being accepted by a steamship company as a cadet without any pre-sea training. The answer is in the affirmative; but only in isolated cases where a boy is of particular merit and is personally known to the management of the liner company employing him. The majority of steamship companies, however, discourage the employment of cadets who have not passed through the recognised training schools, as such boys naturally start at a disadvantage compared with the others and obtain no remission on sea service before taking their first step towards promotion.

Engineer Officers. In order to become an Engineer Officer in the Merchant Navy the first step is, from the age of 15 upwards, to obtain the necessary workshop experience with a marine or heavy engineering concern ashore; and this is usually done by means of apprenticeship. When making arrangements for such apprenticeship it is important that the candidate makes sure that the nature of the proposed training will not be below the standard required for entry into the Merchant Navy.

Having acquired the necessary workshop experience, application for sea-going employment should then be made direct to a shipping company. Appointments as junior engineer officers are at present restricted to young men between the ages of 20 and 30. Thereafter attention must be concentrated on passing examinations, first to qualify as a Second Class, and subsequently as a First Class Engineer. A candidate for a second-class certificate must not be less than 21 years of age and in addition to the necessary workshop training he must also have done eighteen months' sea service with regular watchkeeping duties. Attendance by an apprentice engineer at a course of instruction in an approved technical school is accepted in lieu of part of the required period of workshop service for examination purposes.

Incidentally, qualified engineer officers of the right calibre

are very much in demand at the present time: the pay approximates to that of the various grades of navigating officers, and the prospects of quick promotion, after qualifying for a first-class certificate, are particularly bright.

Radio Officers. It may be of interest to note that the majority of radio officers in merchant vessels are *not* employed by the shipping companies. A steamship line requiring a radio officer normally applies to one of the marine wireless companies, who make a suitable appointment from among their floating personnel.

A young man who wishes to become known as "Sparks" at sea must be physically fit and possess a first- or second-class certificate of proficiency in radio telegraphy obtainable through his attending one of the many established schools of instruction, a list of which can readily be obtained by application to the Inspector of Wireless Telegraphy at the General Post Office in London.

It is advisable, before making arrangements to attend a wireless college, that the budding "Sparks" should approach one of the marine wireless companies, from whom he can learn all about his future prospects. These are: (1) International Marine Radio Co. Ltd., 5 Lime Street, London, E.C.3; (2) Marconi International Marine Communication Co. Ltd., Marconi House, Chelmsford, Essex; and (3) Messrs. Siemens Brothers & Co. Ltd., Woolwich, London, S.E.16. Alternatively, he could approach one of the few shipping companies who offer direct appointments to radio officers, but this is probably the less advisable course, since it loses for him that particular freedom, enjoyed by radio officers alone, of (within limits, of course) being able to pick and choose from voyage to voyage whence or with whom he travels.

Deck Ratings. It is essential for a boy who wishes to obtain employment in the deck department to have undergone pre-sea training ashore. Entry into the Merchant Navy is restricted to those between the ages of 16 and 17 years three months. All British foreign-going vessels over 7000 tons are required to carry a minimum number of efficient deck hands. Seamen qualify for this grade by examination, and if they are more ambitious they become eligible, after a period of four years' sea service, to sit for their second mate's ticket on exactly the same terms as a cadet.

There are a number of well-known training ships and schools which accept boys of good character and not only qualify them as deck ratings but also place them with the various steamship companies. Among the best-equipped establishments are the T.S. *Dolphin* at Leith, the T.S. *Arethusa*

at Rochester and the *Indefatigable and National Sea Training School for Boys*, now housed at Plas Llanfair, facing the Menai Straits. I happen to be closely associated with the administration of the *Indefatigable*, which caters for orphans or sons of seafaring men and any other boys of good character; but it is also considered by others, less personally interested in it than I am, to be the best among such establishments. Boys are admitted between 14½ and 15, and the length of the course is 1-1½ years. The usual fee is £35 per annum (or 13s. 6d. per week); but reductions are made in deserving cases and parents of the right type of boy are not asked to pay the full rate, should this appear to be beyond their means. The particulars of entry, length of course and type of boy catered for, vary so much as between the other pre-sea training establishments that space does not permit me to quote them all here.

Firemen and Trimmers. If anyone really does want to be a fireman or a trimmer I can only tell him that he should apply to the Shipping Federation Ltd., who give a course of training in the arts of firing and trimming to young men between the ages of 20 and 30 provided they have fulfilled their obligations under the National Service Acts.

Stewards and Ships' Cooks. The best way of qualifying for what is more officially termed "a junior catering rating" is to attend an eight weeks' course at one or other of the two National Sea Training Schools situated at Gravesend (Kent) or Sharpness (Gloucester). All applicants should be at least 16 years old and must be medically fit (the wearing of glasses is a definite bar to acceptance). If required, full particulars can be obtained by writing to the National Sea Training Schools, 52 Leadenhall Street, London, E.C.3. There is obviously something specialised in nautical cookery because, in addition to the national schools, one can study the subject initially, or take refresher courses in the art, at institutions set up for the purpose in most of the seaports of Great Britain.

I think that covers almost everything, and I hope it may prove of some value to those whose offspring are attracted to seafaring service under the "Red Duster." It's a grand life, whichever way one approaches it, especially for those of us with more than a touch of sea fever in the blood. And I hope also, even if you're not directly interested and have read so far, that you will at least say "By Jove, that chap Farquharson seems to know his stuff!" In acknowledging the well-merited compliment, Farquharson takes his bow jointly with a little pamphlet recently revised by the Ministry of Transport entitled "How to join the Merchant Navy." It's mostly all there for those who are clever enough to sort it out!



An H.M.S. Worcester has been used since 1862 to train sea cadets. The fourth vessel of this name is now moored in the Thames.

The RAILWAY HOBBY

By Harry Townley

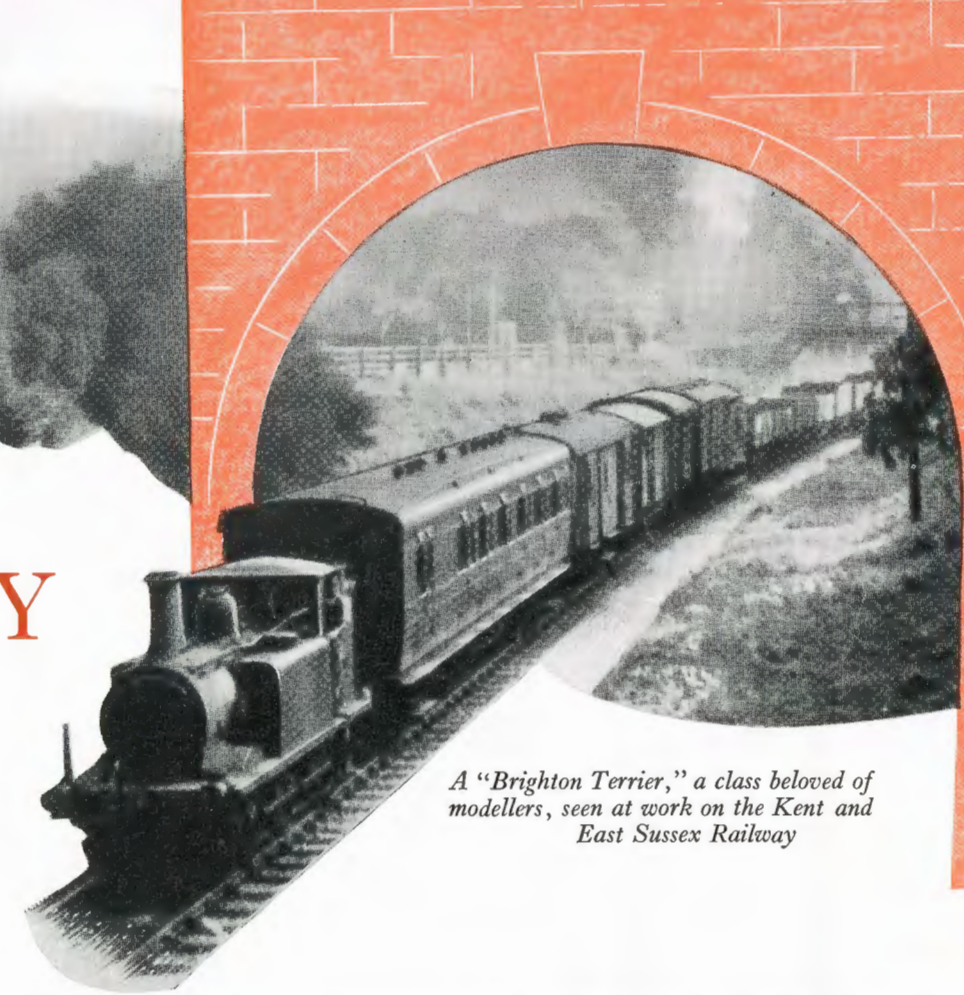
RAILWAY MODELLING has been described as a hobby for boys of all ages and is usually considered to be a

craze of the younger generation, somewhat on a par with "number-snatching." A visit to any of the large model railway exhibitions will reveal, however, that the majority of visitors are not young in years. Over a million pounds is spent on the hobby each year, and the *Model Railroader* prints nearly 100,000 copies per month; these facts show the extent of the interest in this subject.

There are two types of railway modellers. Firstly, those whose interest lies in the building of locomotives, many of which are of sufficient power to take their builders for a ride. It is unusual for such models to be strictly to scale; but there are some fine exceptions, and the trend is towards better models. Secondly, as distinct from the modeller of railway equipment, there are those who make models of railways. These can be indoor or outdoor, and may be complete with tracks, signals, stations, etc., the trains being operated by their drivers in accordance with working timetables.

The railway modellers in one form or another are found in all walks of life, and this is probably due to the large variety and range of interest which is covered by the subject. Emphasis can be placed on construction or operation, track or ancillary equipment, historical or research models. The great attraction of model railways lies in this wealth of interest.

The modeller of ships or aeroplanes has some difficulty in finding scope for operating his models, but the railway enthusiast can have an operating railroad in a space no larger than a table top. Here his empire can be built—hills and valleys, bridges, tunnels, stations and factories, in addition to the track and rolling stock. And, unlike the gardener, he is not tied to his hobby, for the layout does not suffer from neglect if he is unable to work on it for a month or so.



A "Brighton Terrier," a class beloved of modellers, seen at work on the Kent and East Sussex Railway

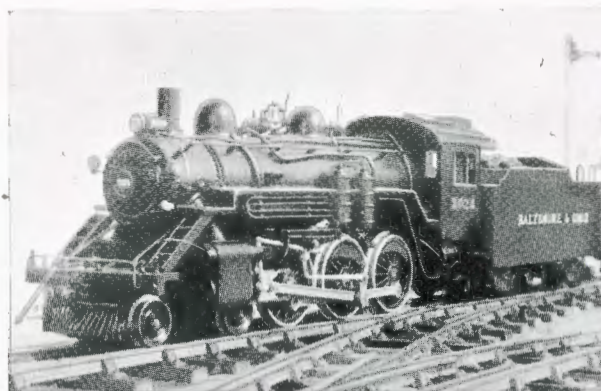
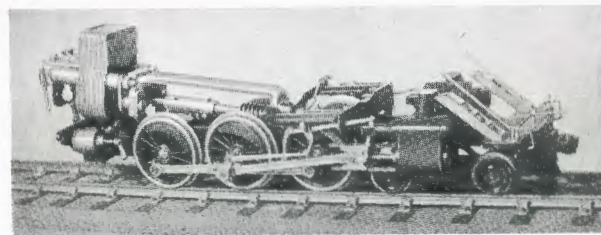
The tendency is for railway models to become smaller, and commercial models are now made to run on track less than half an inch between the rails. Several amateur models are as small as ⅜ in. between rails. I am somewhat old-fashioned in that I use o gauge, i.e. the same size as Hornby, and in fact my stand-by loco is a Hornby model of a Midland "compound." My oldest steam loco is a Marklin which was bought almost by accident before the war. It looks somewhat unorthodox and has a weird and wonderful valve gear, but it runs very well. In spite of its small boiler it has travelled over 1000 yards with one filling. My other steam loco was obtained as a kit of parts in 1940, again almost by accident, and built up in odd moments. Both these locos run by "perforated spirit," to use an expression which a little girl was overheard to say at an exhibition where the models were running. The latest loco is electrically driven and has been built up from an American kit of parts. The amount of external detail makes it a most attractive model.

The railway itself is based on the Buxton district, but at the moment it has been modified to permit continuous running until further extensions have been made. It is important that the system should be developed in such a manner that it can always be operated, since visitors are keen to see locos at work. Some of them bring their own locos, and many interesting tests have been carried out in comparing the performances of various types. One such visiting loco is illustrated overleaf with a short goods train which includes a type of wagon that is all too rare in the model world (an I.C.I.). Behind the loco is shown part of a station which was designed to disguise the fireplace.

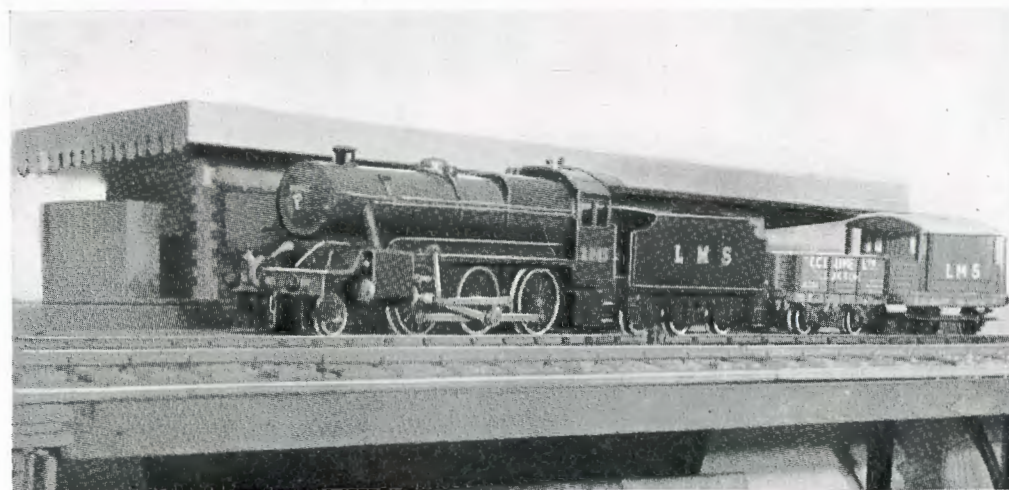
May I offer a word of advice to the reader who visits a private or public model railway establishment. Please do not

describe it as a "schoolboy's paradise" or words to that effect, and do not confuse a model with a toy. A toddler would play with your most expensive gold watch, but he would probably derive more satisfaction from a rattle! I was once visited by a fond father who brought such a toddler to "see the trains," and he commented on how interested the youngster was because he had been so quiet. The real reason for the quietness was that his son had been busy wrenching off the back wheel of the taxi which stood outside the station. So, if you want to visit, don't use the youngster as an excuse. The owner of the railway would much prefer to see you alone, for he cannot concentrate on operation while expecting months of work to be ruined in a few minutes by children who are too young to appreciate the models. On the other hand, some of the older children are the most severe critics, for their powers of observation are sometimes amazing and their comments really useful.

Early in the century England was leading the entire world in the production of models. There was the well-known firm of Bassett-Lowke with its consultant the late Henry Greenly, who designed models from $\frac{5}{8}$ in. gauge to the monster models on the Romney, Hythe and Dymchurch Railway, which are one-third full size. After the first world war more firms produced models and parts from which a model could be built up. The usual way was to purchase a mechanism to which front and rear frames were added, then make or buy chimney, dome, safety valve and the other fittings. About this time the American manufacturers became interested in model railways, and their sales research soon found that the average builder did not want to spend a lot of time designing and collecting parts, so they marketed loco and rolling



(Top) The chassis of a model Baltimore and Ohio locomotive with (bottom) the finished electrically driven engine



A steam-driven model of an L.M.S. locomotive

stock kits which contained all the parts and instructions needed for building up the vehicle. Kits of parts for building up goods and passenger vehicles have been on the market in this country, but do not seem to be as popular as those in America.

There are two o-gauge kits for steam locos available here but nothing on the lines of the modern electrically driven job which I have recently completed. As will be seen from the illustration of the chassis, bits and pieces are not added to a mechanism unit, but the frames, etc., are built up as in real practice, and it is the motor which forms an addition. The "boiler" and superstructure, complete with headlamp, chimney, sandbox, turbo-generator, top feeds, bell, dome, etc., form another unit which fits on top of the chassis. Some idea of the amount of work involved in assembling such a kit may be gathered from the fact that there are some 336 separate items to be fitted together. The appearance of the finished job can be seen in the illustration.

Electric locos are specially useful for remote control, but they do not display the life of the steam-driven ones, which have a charm of their own. Many types of track are used for electric models. Usually the running rails are employed for the return current, with a live third rail either inside or outside them. However, such an arrangement does not look right with a steam-outline loco, especially when an ugly outside collector is used to pick up the current from the live rail. Modern models are therefore made with insulated wheels so that the current can be picked up from one running rail and returned to the other. The American model is arranged in this way.

If these notes have aroused your interest in railway modelling there is sure to be someone in the neighbourhood who is willing to give advice and help. Alternatively, join a club where various forms of construction can be seen and examined. It is always worth while to see a model railway to get an idea of what would best suit your own interests. Finally, if you take up railway modelling, you will have a hobby of great interest, as may be shown by a quotation from Varney's instruction sheet for the building of a model loco: "It is now 2 o'clock in the morning, so put the damn' thing (gently) away."

I.C.I. NEWS

Sir Frederick Bain Honoured

Sir Frederick Bain, M.C., Deputy Chairman of I.C.I., had a great ovation from Aberdeen undergraduates when he attended the graduation ceremony at his old University on 7th July to receive the Honorary Degree of Doctor of Laws (LL.D.).

When presenting Sir Frederick for the honour, Professor T. B. Smith, the promotor in law, said that it would be fitting if the University, of which Sir Frederick was a distinguished alumnus, were to recognise one of her sons who today occupied one of the great positions in the industry of this country.

Sir Frederick, he said, was a native of Macduff and was educated there, at Banff Academy, and at Aberdeen University. During the 1914-18 war he served in the 4th Gordon Highlanders, attaining the rank of captain. He was twice wounded, twice mentioned in despatches, and awarded the Military Cross. From 1916 to 1918 he was deputy director of Chemical Warfare Supply in the Ministry of Munitions.

In the late war he acted as chairman of the Chemical Control Board of the Ministry of Supply from 1941 to 1944. He was also chairman of the Chemical Planning Committee of the Ministry of Production from 1942 to 1944. In 1945 a knighthood was conferred upon him in recognition of his distinguished services.

"His many business interests are reflected in the fact that he was vice-president of the British Employers' Confederation, vice-chairman of the Association of British Chemical Manufacturers, and president of the Federation of British Industries from 1947 to 1949," said Professor Smith.

Sir Frederick, he concluded, had continued to take a warm interest in his old Regiment and in the life of his native countryside.

I.C.I. at Chicago Trade Fair

For the first time in the history of the Company I.C.I. had a stand at the Chicago Trade Fair, which opened on Monday, 7th August, for two weeks. The exhibit, which occupied some 1600 sq. ft., told the U.S.A. of I.C.I.'s record of scientific achievement and the scope of its production—a matter of special interest to Americans, as it is only a few months since the Company announced that it had bought a controlling interest in the American chemical concern of Arnold Hoffman and Co. Inc., Providence, Rhode Island.

In the confines of an exhibition stand it was not, of course, possible to show more than a small cross-section of I.C.I. products or to do much more than refer in passing to the world-wide organisation which handles I.C.I.'s chemical exports from Britain and disposes of about £40,000,000 worth

annually in the world's markets. The exhibition showed, however, how this overseas selling organisation covers every country in the world, except Russia and some of her satellites.

Some of the discoveries of world significance for which I.C.I. research has been responsible in recent years were described and displayed on the stand. These included 'Paludrine,' 'Methoxone,' 'Alkathene,' 'Gammexane' and 'Antrycide.' The seven diorama models showing users of colour through the ages, produced for the 1948 I.C.I. exhibit at the B.I.F., where they were admired by Her Majesty the Queen, were a special feature of the stand.

A booklet describing I.C.I., containing reproductions of paintings by famous British artists, including Edward Wadsworth, A.R.A., C. R. W. Nevinson, A.R.A., and Anna and Doris Zinkeisen, was prepared for distribution at the exhibition.

ALKALI DIVISION

Alkali Band Plays in Manchester

The I.C.I. (Alkali) Band, which is now at full strength and has regained much of its pre-war glory has been commissioned by the Manchester Parks Department to play in two of the larger Manchester parks. On each occasion they played for two hours in the afternoon and two hours in the evening, and met with a great reception. They have received very high praise from the Musical Director for the Manchester parks, and it is hoped they have laid the foundation for annual performances in these parks.

The Bandmaster encourages newcomers to the firm and also sons of employees to join the band, ready to fill places as others leave. A regular bandsman has now three sons playing in the band, the youngest of whom is only 14 years old.

The band is always available to play at Division functions. It has also offered to give evening concerts for the benefit of residents at our hostels. The band playing at the side of the swimming pool at Marbury Hostel is an attractive sight.

BILLINGHAM DIVISION

Apprentices Win 3-year Scholarships

Two 16-year-old Billingham apprentices, John Hudson and Kenneth Smith, are being sent by the Company to Constantine College, Middlesbrough, where they will take the Sandwich Course for the Higher National Diploma in Engineering. The course lasts for three years, during which time the Company will pay their wages as usual. During holidays the boys will return to their jobs in the factory.

Since they left Stockton Technical School three years ago, Hudson, who is apprentice instrument artificer in Ammonia

Works, and Smith, who is an apprentice fitter in Gas and Power Works, have studied at night school, gaining their S.2 certificates. This was one of the qualifications the Company required the successful candidates to have. Others were the writing of an English essay and good reports from their works manager.

I.C.I. President for Junior Chambers of Commerce

The appointment of Mr. J. B. Robertson as President of the National Council of British Junior Chambers of Commerce has given much satisfaction to his friends and colleagues at Billingham, where he is deputy distribution manager.



Mr. J. B. Robertson

His Junior Chamber activities began at the formation of the Tees-side Junior Chamber in 1947; he first held the office of chairman of the Programme Committee, afterwards becoming vice-chairman and later chairman of the Chamber. His ability and enthusiasm were soon recognised, and in January 1948 he was appointed delegate to the National Council. Later that year he was co-opted to the Executive Committee, becoming deputy president for the year 1948-9.

The National Council co-ordinates the activities of the Junior Chambers affiliated to it, of which there are over 30 in this country with a total membership of over 2700. A constant interchange of ideas and information with similar bodies overseas is maintained.

Visit to Forty-mile Tunnel

Dressed in steel helmets, waterproofs and wellington boots, a party from the Heysham Works Electrical Department with a few guests recently made an interesting tour of the underground excavations which are being made to convey water from the Lake District to Manchester for the Manchester Water Board.

The excavations are under the Pennine Chain and when completed will be roughly 40 miles long. The party covered 85 miles and had an instructive trip.

Heavy Demand for Fertilizers

The efforts being made by farmers to grow more grass for grazing and haymaking are reflected in a heavy increase in sales of 'Nitro-Chalk.' During the 1949-50 fertilizer season, which ended on 30th June, more 'Nitro-Chalk' was despatched from the factory than in any previous season—but was still not enough to meet demand.

Sales of sulphate of ammonia are also up, and the end-of-season demands exceeded all previous estimates. During June sulphate of ammonia was leaving the factory at the rate of 8800 tons per week.

GENERAL CHEMICALS DIVISION

Centenary Presentation

At a ceremony in the Widnes Recreation Club described by Mr. W. F. Lutyens, the Group Director, as unique in the annals of I.C.I., the Division Chairman, Mr. G. K. Hampshire, accepted on behalf of the Division Board the gift of a handsome silver inkstand from the employees at Widnes as a token of their appreciation of the Widnes Centenary Celebrations.

The ceremony, which took place on 19th July, demonstrated the depth and sincerity of the feelings engendered by the June Celebrations.

Employees of all categories and grades in the various Widnes Works and the Widnes Laboratory, acting entirely spontaneously, had made known their desire to express their appreciation of all that had been done for their enjoyment and happiness in marking the Centenary of Widnes Chemicals. They decided their gratitude could best be shown by subscribing for a present to be offered to the Division Chairman and members of the Board as a lasting memento of a great occasion.



Mr. G. K. Hampshire, chairman of General Chemicals Division, receives an inkstand in the presence of Mr. W. F. Lutyens (Group Director)

After the presentation of Long Service Awards, Mr. Hampshire was asked to accept the inkstand by Mr. G. Leather and Mr. H. P. Minton, appointed by their colleagues to make the presentation. They were introduced by Mr. W. H. Palmer as "the spokesmen of the employees of the Widnes Works who desired to have some words with the Division Board."

Mr. Hampshire, referring to the "kindly and homely thought expressed in this tangible fashion," promised that the inkstand would always be used at board meetings. "I shall dip my pen in it when I sign the minutes which (although they may be jokingly referred to as a lot of nonsense) will in future wear a halo—sanctified by the kindly feelings of one to the other in this Division," he said.

Mr. Lutyens, addressing the gathering, said that this was the first occasion when he had seen "a real, live present" made by the employees to a Division board. It confirmed the wonderful relations which linked our employees with the management.

Mr. W. W. Gleave

On 30th June one of the best-known personalities in the Research Department retired—Mr. W. W. Gleave, who has just completed 49 years' service. At a gathering of his immediate colleagues in the Conference Room, Mr. C. G. Harris presented him with a cheque as a token of the best wishes of the Department for a long and happy retirement.

In a short speech Mr. Harris traced Mr. Gleave's career, dealing with the many important branches of research with which his name will always be associated. As Mr. Harris said, it is of distinct interest and perhaps a comfort to some of us to know that Mr. Gleave's outstanding contributions have come when he was past the age of 50.

As an artist, Mr. Gleave has made a name for himself; and his historical exhibition at the Widnes Centenary Celebrations was a fitting grand finale to his life's work in the service of the Company: it linked his two main accomplishments, skill in art no less than in science. Mr. Gleave is also a music lover and makes violins in his spare time.

Mr. Irvin Hufton

Mr. Irvin Hufton, for the last 18 years Chief Records Officer at the Pilkington-Sullivan Works, retired on 30th June after 46½ years of unbroken service. He started his working life as a boy fresh from school on 14th January, 1904, in the analytical laboratory of what was then the Sullivan Works of the United Alkali Company Ltd.

His career has been spread over three distinct periods. He was a laboratory assistant until 1916, assistant manager of the Electrolytic Chlorine Department from 1916 to 1932, then Chief Records Officer. On his last day, and in the presence of a large gathering of the staff, Mr. Moore presented Mr. Hufton with a bookcase.

Bravery Award to Lorry Driver

An I.C.I. bravery award to Mr. H. Thornton, driver at Central Traffic Department, Widnes, has been approved by the Main Board.

On 27th June Mr. Thornton was driver of a lorry which was loaded at Gaskell-Marsh Works with calcium in aluminium drums. When the lorry was being sheeted, he noticed that one of the drums was smoking, as water had leaked into it and caused a reaction. This drum was removed by the processmen, and very soon afterwards it caught fire. The lorry was then driven forward a short distance under the Chamber Plant so as to get shelter from heavy rain which had just started.

The plant manager inspected the other drums on the lorry and found four or five of them were warm. Some of them



Mr. H. Thornton

were removed but others caught fire, burning with great intensity, and the fire was spreading with alarming rapidity to the remaining drums.

The flames and great heat very soon threatened the timber structure under which the lorry was standing, and the plant manager instructed the driver, H. Thornton, to move his lorry. Thornton immediately did this and drove to an open space near to the Fire Station, about 100 yards away. Here he jumped clear and then, ignoring the fierceness of the flames, began to unload from the lorry the drums which were not yet on fire. A total of 18 drums was completely destroyed but 52 were saved.

The Works Fire Brigade prevented the fire from spreading to railway wagons and nearby buildings and saved the front part of the lorry. They were assisted by the N.F.S., who had been summoned in case the fire spread to adjoining buildings.

The intense heat from the incandescent material, and the way in which the fire was spreading to the other drums, was very alarming. It was Thornton's brave action in driving the lorry from under the Chamber Plant that prevented a major catastrophe which might easily have resulted in the loss of the whole plant and in danger to life due to the sudden release of large quantities of acid.

METALS DIVISION

I.C.I. Helps Build "Comet" and "Brabazon"

All who work at the Marston Excelsior factory of the Metals Division at Wolverhampton are proud of the fact that both the Bristol "Brabazon," the world's largest civil land plane, and the de Havilland "Comet," the record-breaking jet airliner, are using 'Marex' aluminium alloy heat exchangers for cabin coolers.

Heat exchangers for aircraft made by the Metals Division

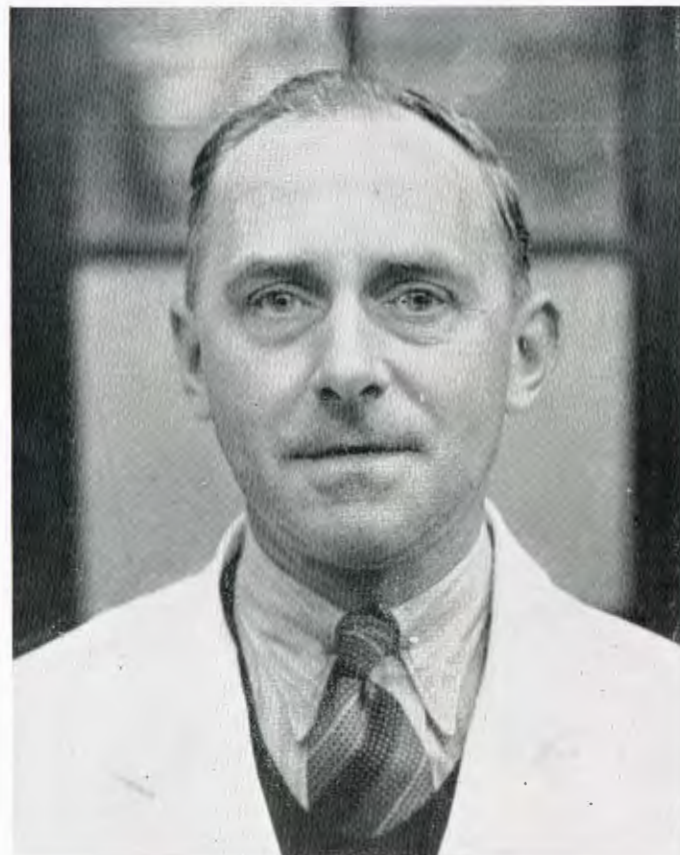
are used to bring the water or other coolant in the engine into the nearest possible contact with the cold airstream, to cool the oil supply to the engine or the air in a pressurised air-conditioned cabin.

Non-ferrous metal in the form of copper and copper alloys soldered into such compact units are very suitable owing to their flexibility and high resistance to corrosion. The latest Marston heat exchangers, however, are of aluminium alloys.

The use of aluminium alloy instead of the more customary copper results in a reduction in weight of between 30 and 50 per cent, according to the type of unit. The major problem with the use of this relatively new material was to find a satisfactory method of brazing the components into an efficient unit. Much research and experimental work went into devising the correct technique, but the results have proved worth while, since our Wolverhampton factory was the first firm in the country to undertake the work satisfactorily.

£255 Suggestion Award

An employee of Lightning Fasteners Ltd., Witton, has received one of the biggest Suggestion Scheme awards ever made in the Metals Division—£255. He is Mr. Arthur Ellis.



Mr. Arthur Ellis, £255 Suggestion Award winner

Mr. Ellis, who was then a chargehand on the section producing "Number Nought" zipp fastener, the smallest fastener made in this country, put through the Suggestion Scheme an idea for certain alterations to the operating mechanism of the machine making the fastener. The adoption of the suggestion resulted in a considerable increase in working efficiency, enabling the demand for the new fastener to be more easily

met. The award was made by Captain W. E. Smith, Managing Director of Lightning Fasteners Ltd., in the presence of the Lightning Fastener Suggestion Committee, and of Mr. J. B. Nevitt, the Director responsible for the Metals Division Suggestion Scheme.

Fifty Years at Witton

Miss Elizabeth Thompson, of C Case Department, Witton, who started work there when she was twelve years old, has completed 50 years' service with the Company—and still has at least three years of work ahead of her.



Miss Elizabeth Thompson

She recollects that in 1900 when she was an errand girl for foreman "Josh" Clarke she worked a 48-hour week for which she was paid 5s. 2½d. Later, she became a machine operator at 7s. 8d. a week. Posted on the back of the machine which she operates today is the pay docket showing that amount.

In spite of the small earnings and the fact that they worked a great deal harder in those days, Miss Thompson considers girls were happier then than they are now.

NOBEL DIVISION

Boiler Chargehand Wins Racing Pigeon Classic

Flying at nearly 40 m.p.h., Southern Queen, a homing pigeon belonging to Mr. George Lupton (boiler chargehand, Powfoot), won the famous race from Rennes, in France, to Annan, Dumfriesshire, the event of the year for Scottish enthusiasts.

Before the Rennes race, Southern Queen had flown in two big events, from King's Norton, finishing fourth, and from Christchurch, when she was placed ninth. Her daughter won this race.

Southern Queen's speed, over the 484 miles of the Rennes

to Annan race, was 1152 yards per minute, or almost 39.3 m.p.h. Her nearest rival was three yards per minute slower.

Ardeer Golfers in Scottish Championship

Two well-known Ardeer golfers, Hamilton McNally and Jack Cannon, took part in the Scottish Amateur Golf Championship. Many of the critics considered that, although Hamilton McNally had been prevented from playing much golf in the winter and spring, his knowledge of the Ayrshire course and his fighting spirit would carry him a long way in the championship. Jack Cannon was also considered to have a good chance of the title. Local people were very confident after the qualifying rounds were over.

Both players reached the third round, where Cannon was defeated by two and one, and McNally, whose game the spectators judged lacked a little of his usual assurance, lost his fourth round tie by two holes.

Mr. Robert Maxwell

We record with deep regret that Mr. Robert Maxwell, an employee at St. Rollox Works, who was last year Division and Central Works Council representative, collapsed when playing in a works bowling tie at Alexandra Park on 5th July. An ambulance was summoned, but Mr. Maxwell was dead when he reached the Royal Infirmary.

PAINTS DIVISION

Division Chairman visits South Africa

Mr. L. H. Williams, Paints Division chairman, is now in South Africa visiting A.E. & C.I. (Paints) Ltd., Paints Division's newest associate company, to examine their problems on the spot and to see whether there is any further assistance that Paints Division can render by virtue of its longer and wider experience.

During his trip he will visit Cape Town, Port Elizabeth, East London, Durban, where the head office of A.E. & C.I. (Paints) Ltd. is situated, and then the Johannesburg office of A.E. & C.I. for final discussions. Mr. Williams plans to meet all the former employees of Paints Division who were transferred to A.E. & C.I. (Paints) Ltd.

Slough Man for All-England Bowling Championship

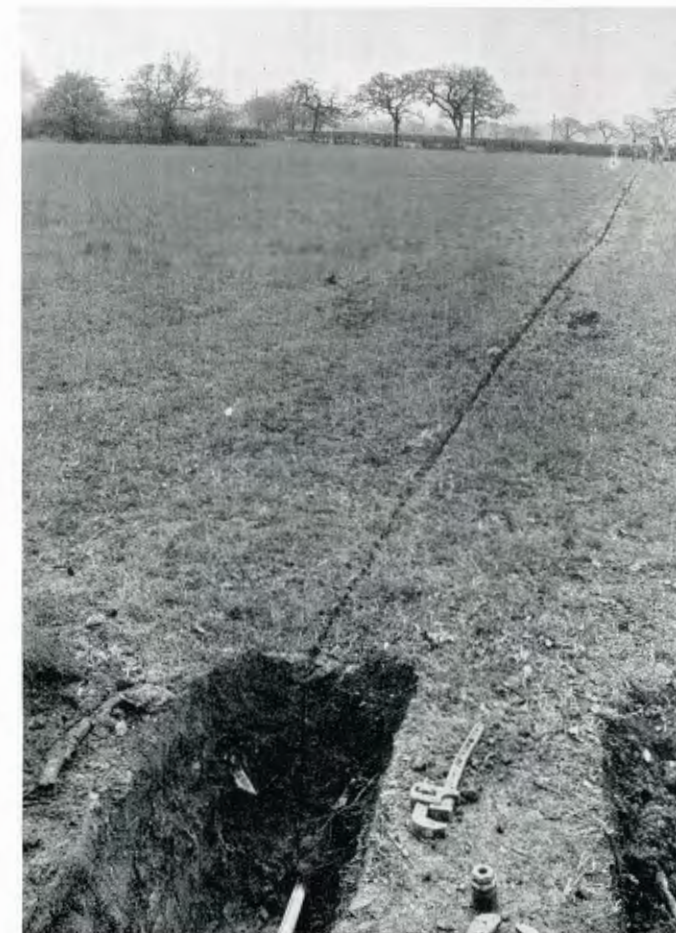
Mr. R. A. Berridge, senior stores foreman at Slough, won the final of the Bucks County bowls singles championship at Chesham on 29th July. This entitles him to play in the All-England bowls championship, to be held at Paddington this month. He will be one of 60 finalists at Paddington out of an entry of 8000.

Mr. Berridge, who has been playing bowls for eighteen years, has been seven times I.C.I. singles champion. He was also a member of the winning triples team in the 1947 Bucks championships.

PLASTICS DIVISION

High Rate of Laying 'Alkathene' Tube

Two thousand feet of 'Alkathene' tube—the longest run ever installed in this country—were recently laid at the rate of 500 feet in three minutes to bring running water to a group of cottages in Penbedw, Flintshire. A large crowd watched a tractor and mole plough complete in a matter of minutes an



Laying 'Alkathene' cold water piping on a farm by mole plough

operation to supply drinking water to a community that for generations, winter and summer, carried every drop of drinking water from a well more than half a mile away.

The cottagers' landlord, Miss V. D. Buddicom, the well-known Flintshire agriculturist, of Penbedw, Nannerch, who provided the new water supply, is also having 3000 feet of 'Alkathene' tube laid to bring water to cattle in outlying fields on her farms.

"Art and Industry" Competition

Plastics Division is sponsoring a competition to be organised by the journal *Art and Industry*, in which prizes to the value of £100 will be awarded for the best designs for the reception office of a small hotel in which plastics, and particularly 'Perspex,' are employed.

Competitors are asked to supply a design for the reception office of a small but exclusive hotel catering for high-class Continental and American tourist trade. This hotel has 20 bedrooms and is situated in Mayfair, London.

A free hand is given with the treatment of both floor and walls, but the suggestion is made that mural decorations should be planned to appeal to the type of visitor indicated. The object of the competition is to bring out the beauty of plastics and particularly 'Perspex' acrylic materials. Favourable consideration will, however, be given to any treatment which satisfactorily combines the newer with the older traditional materials.

The judges for the competition will be Mr. A. Renfrew,

Plastics Division Development Director, Mr. Basil Spence, O.B.E., F.R.I.B.A., F.R.I.A.S., and Mr. Leslie Hardern (chairman), Design and Industries Association and Chairman of the Inventors Club. The rules governing the competition are to be published in the September issue of *Art and Industry*, and the provisional closing date is 7th December, 1950. It is proposed to stage a small exhibition in London where the winning entries and other selected designs will be shown.

Fish of the Month

The £20 prize in the June section of the competition was won by Mr. F. Green, of Canley, Coventry, with a fine tench weighing 5 lb. 14 oz. Mr. Green's prizewinner was caught in Blenheim Lake, Oxfordshire.

A 5 lb. 3 oz. tench, caught in the river Kennet, at Thatcham, was the runner-up, and gained the £5 prize for Mr. C. E. Roots, of Newbury, Bucks.

THE REGIONS

I.C.I. Man plays against West Indies

All-round cricketing form earned Mr. John A. H. Barratt (Chemicals Dept. Representative) a place in the Northumberland County cricket XI which met the West Indies at Newcastle on 14th and 15th June.

With 14 runs to his credit in the Northumberland first innings John Barratt seemed well set for a good knock when he was out to a most astonishing catch by Jones at mid-wicket. Obviously much stronger than the home team, the tourists held back their star batsman, Everton Weekes, until the ground was well filled on the second day, but John Barratt brought the house down when he captured Weekes' wicket in the second over.

Formerly a member of Surrey second XI, John Barratt came to Tyneside about three years ago, and soon became an automatic choice for Northumberland County. Against Lancashire second XI last summer he figured in a partnership of hurricane hitting with the county skipper L. E. Liddell, which realised over 200 runs in record time, Barratt's share being 86. As a spin bowler he is almost unplayable on a sticky wicket, and has many excellent performances to his name.

SALT DIVISION

New Plant at Stoke Works

The new plant at Stoke Works, which came into operation on Sunday, 2nd July, marks a change over from the old open pan process to the more economical vacuum process. Mr. C. R. Prichard, Salt Division chairman, mentioned this when presenting 24 Long Service Awards at Stoke.

He said that this new plant, the first the Division had built in 40 years, was an essential step forward, as for the next two or three years the salt trade would experience difficulties. During and since the war reconstruction had been impossible, and in consequence plant was inefficient and productivity was low as compared with the U.S.A. But now, with excellent technical resources and everybody putting their backs into the job, the coming menace of Dutch salt and German rock salt would be overcome.

Young Cricketers of Promise

Two of Salt Division's bowlers, Tommy Buckley and Oswald Killcross, have bowled so consistently well throughout the season that the local press has drawn attention to their performances.

Tommy Buckley (Building Section), who joined the Company in 1946 at the age of 14, was selected to play for the Runcorn Cricket League A Team in a representative match of players from all teams in the league. His best performance was earlier in the season in a match against the Runcorn Gas Company, when he took 5 wickets for 2 runs. Oswald Killcross (General Office) has been the automatic choice as opening bowler for a number of seasons. At the age of 26 he continues to improve on his good length medium-pace bowling.

Bowls Champion Loses Title

By losing 21-15 to B. Burgess in the semi-final of the Cheshire Individual Merit Competition at Stockport on 8th July, Arnold Bebbington relinquished his title of Cheshire Champion. But by securing a place in the last eight of the Cheshire Merit he was entitled to compete at Stafford on August Bank Holiday in the All-England Crown Green Championship, which he won last year.

After winning three rounds at Stafford, Mr. Bebbington was narrowly defeated 21-18 in the round before the semi-final. He was, however, successful in gaining fifth prize. To gain third, first and fifth place in the All-England Championship in three successive years is a feat of which Mr. Bebbington may be very proud.

Mr. E. H. Sale

Mr. E. H. Sale, new Salt Division Chief Engineer and Director, arrived at Winsford at the beginning of July.

During the war he supervised the starting up of a factory at Heysham for the production of aviation spirit. At the end of the war he returned to Billingham as Deputy Chief Engineer, where he dealt with such post-war problems as the development of the new nylon plant and of the petroleum-cracking plant at Wilton.

THE OCTOBER "MAGAZINE"

In the next issue we are starting a new series written specially for us by Mr. F. H. Perkins, the I.C.I. Education Officer. His first article deals with the training and prospects of an apprentice in I.C.I.; and he casts an eye over his shoulder to the days when he was an apprentice himself. The next article will be concerned with Training of Foremen, and the last with Training for Management.

Contrasting with this up-to-date article is one looking back at the early struggles facing John Brunner and Ludwig Mond when they started their business at Winnington in 1873. Alkali Division is fortunate in having preserved the very earliest jottings, notebooks and letters of the partners from which this study by A. S. Ervine of their difficulties—even of their financial embarrassment—is drawn.

Also from Alkali Division comes an article by John Dowler, who, while in America last year as a member of an international group of engineering and chemical students, took advantage of a vacation to travel by car from east to west across the country, covering 4000 miles. He records his experiences with that observant eye for detail which is the hall-mark of the good descriptive writer. Our other contributors are Cedric Jagger of Head Office, son of the well-known sculptor, who writes enthusiastically on his hobby of collecting antique clocks and watches; and Dorothy Thomas of Metals Division, who again tells us about the things that have happened to her with a happy touch of feminine sensibility.

The Principles and Practice of LIAR DICE

By A. W. Baldwin (Dyestuffs Division)

SOMEbody or other once said "There are three kinds of liars: liars, damned liars, and statisticians." Whoever it was, and I neither know nor care, he should have added a fourth category—liar dice players! If you don't play liar dice, don't start. It has a corrupting influence and will dissipate whatever ethical standards you may have.

I am now prepared to give 6 to 4 that non-players will be beside themselves to start. All right—don't say I didn't warn you! This is how you play.

First you need a set of poker dice—five dice, each of which is marked with a nine, ten, jack, queen, king and ace, one on each of its six sides. There is something essentially raffish about a set of poker dice. You will search the pockets of bishops and university professors in vain for them. They are to be found on the persons of bartenders, racing tipsters, mobsters, and suchlike characters. I bought myself a brand new set for seven bob at a sports outfitters—a good, clean set bought with good, clean money. But you will find ex-service types who have picked up their poker dice in some very queer places. I occasionally find myself playing with dice provided



Illustrated by
P. V. Moon



by my friends (friends, eh? That's a good one!), and I am prepared to swear that some of those bones started life in a dockland flophouse or some even less savoury establishment—very sinister-looking dice with dark and dirty histories, no doubt.

In theory any number can play, but it is best to restrict the numbers to four or five. So choose three or four people to play with you (preferably people whom you have to teach how to play, and, best of all, people whom you don't like very much). For your object will be to deceive, hoodwink, bamboozle, and finally to rob them.

The principles of the game (if such a nefarious pastime can be said to have principles at all) are based on poker. And the hands you can get, in ascending order of merit, are a pair, two pairs, threes, straights, full house, fours and fives. You start the game off by taking all five dice in your hot little paws (gentleman at the back of the hall gets up to protest that his little paws are not hot, and I reply congratulating him but pointing out that they very soon will be if he is playing liar dice), shaking them up well and throwing them. But, and this is *most* important, you must not let anybody see them. Keep your paws round them. Then take a squint at what you've got. This is, of course, difficult, and one of your long-necked companions will try to take a peep at the same time. Give him a sharp rap on the snoot if you catch him at it.

Now you make a declaration of your hand to the man on your left. You may tell him the simple truth or you may tell him any cock and bull tale you like. It is, of course, much more fun to give him a line of bull; but remember, you may not get away with it. If he accepts it he takes the dice from you (still covered, mind) and he may shake one or more of the dice; or he need not shake any at all. But he must say how many he shakes. He must then declare to the man on his left a call higher than the one you declared to him. Got it? Now, then. If the man on the left, being of the cynical, unbelieving type—a salesman, say—decides to doubt the declaration he must, in clear accents, say so. The declarer must then show his hand, and if he is indeed publicly exposed as a liar he loses a life. If he should, in some fantastic set of circumstances, be telling the truth, then the challenger loses a life. When a man loses three lives he is out. Last in collects all the lives in the kitty. You can play penny a life, bob a life, or anything you like. Oh, it's a nice game!

I usually play with four characters whose names must, from times to time, have figured prominently in the *Police News*. They are Lefty Oakeshott, Harold (Ironpants) West, Smiler Lawrie and Knocker Worrall. Why I continue to associate with such lowdown, despicable—but I must not be bitter. It would be possible, I suppose, to find a more depraved quartet in the Marseilles underworld but not easy. Lefty has a left-handed mode of thinking and it is next to impossible to follow his thought processes; he also has a tendency to peep and must be watched carefully. Ironpants' strong suit is his honest appearance. A solid, foursquare sort of man whom you would naturally trust. Anybody feckless enough to trust him, however, should have his head examined. Smiler, who looks like Nature Boy's uncle, presents a combination of bland unscrupulousness and fantastic luck in throwing. Well, he is either a lucky thrower or a post-throw manipulator. I intend to find out some day. As for Knocker, I must confess that that young man has disappointed me. Prior to his introduction to liar dice I had him taped as an upright fellow who would go far. Now I think he will get about as far as the



"Four men at a table . . . three with expressions of controlled hatred"

Old Bailey. Just picture me as an associate of this formidable four. They call me Birdbrain. I usually sit between Lefty and Smiler. This is how it goes.

Lefty starts and tells me he has got three aces. I look hard at him but can learn nothing from his thoroughly vicious countenance. I say to myself that it is indeed a very good throw but surely he does not have the crust to pull a fast one on me right from the start. So I accept and find that the hand is one ace (one ace, I ask you!), two nines, a jack and a king. I am of a mood to pull Lefty's ears off and toss them out of the window. But I heave a sigh of relief (for Smiler's benefit), and without tossing any of the dice pass it on to him as three aces and a king. In the face of such confidence he accepts, and regrets it bitterly as soon as he sees the dice. But not one of his brotherly feelings towards me is to be detected as he tells Ironpants that he is going to throw one dice. He does this and remarks to Ironpants that he has three aces and a king and a queen. What I do not find out until afterwards is that Smiler, soaked in sin as he undoubtedly is, shakes the one and only ace and the hand that Ironpants actually receives *has no ace in it at all*.

Any sunny-natured citizen such as yourself, gentle reader, would be appalled at such duplicity, but not Ironpants. Without turning a hair—and he has not got many hairs to turn, anyhow—he passes the set on to Knocker as a full house, aces

and kings. Knocker, who by now has come to the conclusion that a really hot hand is circulating, accepts. He finds himself holding two nines, king, queen and jack, and that is no more a full house than I am the Archbishop of Canterbury. It is a lucky thing that Knocker does not have a cosh on his person, for it would be very natural for him to wrap it round Ironpants' noggin.

Knocker is in a tough spot. He is holding the baby and everybody knows he is. He has no more chance of passing the thing on to Lefty with a smooth line of talk than he has of swimming the Channel. So with a saintlike expression he announces to Lefty that he will throw three dice, and Lefty says that in his opinion Knocker is a very sensible fellow. Knocker throws them and calmly announces that he has four nines and an ace. Lefty, affable as a puff adder, tells Knocker that he cannot see his way to accepting that call. So Knocker, more in sorrow than in anger, lifts his paws and—believe it or not—he has got 'em! Four nines and an ace, so help me. Lefty makes an actionable statement about Knocker's parents and tosses his first life into the kitty. That is the way it goes.

So, if you are walking along a corridor train and you see four men at a table, three of them looking at one another with expressions of controlled hatred while the fourth is squinting at something in his cupped hands, tiptoe past and say a little prayer for them. They are playing liar dice.



WORKS Cats

By J. E. Atherton (Alkali Division)

You will find no Persian, Angora or Siamese among works cats. They are a nondescript lot. Nevertheless, some of us before leaving for work have been known to fill up a small bottle with milk and furtively wrap it together with a tasty scrap or two in a newspaper, remarking to the wife, "It's my turn to feed the cat today." For despite his shabby appearance the works cat, without doubt, commands affection.

Today the race of works cats, like the rest of us on this island, is a declining population. The reason is, I think, obvious if

you compare the general layout of, say, the present Cheshire works with that of thirty years ago. Steel and concrete house the modern plant, so that floor space is no longer congested by mains of varying sizes jostling each other in such a manner that it is impossible to keep floors clean. Gone are the many brick and timber buildings whose wooden floors so often covered dark cavities, the repository of rubbish and the home of vermin. And gone too are the favourite haunts of the works cats.

At Winnington we have a periodic works cats census, and we have a works cat welfare officer in the person of Mr. Ben Lee, a laboratory cleaner, who draws from the works canteens rations of scraps for all "registered cats." It is his responsibility to see that special provision is made for week-end feeding of cats in the workshops which are normally closed on Sundays. The sick, too, are under Mr. Lee's care. His first aid box includes bandages, splints, various types of ointment and conditioning powders; and in a special "Cat Box" he removes the sick or injured to nurse at home.

I sensed a trace of disappointment in Mr. Lee's voice when he told me that the number of cats now under his care is far less than it was some twenty years ago. Since they may well become a rarity in the future, some reminiscences of those I have come across during the last thirty years may be of interest.

I well remember how just after the end of the first world war at the Middlewich works of Brunner, Mond & Co. there was a small "circus" of cats with headquarters in the boiler plant. Their trainer was one of the boiler cleaners. They performed all sorts of acrobatic tricks, both individually and collectively. The plant in those days consisted of a battery of some twenty Lancashire boilers with two sets of fuel economisers in the flue system between the battery and the chimney. There were no mechanical soot blowers on the plant, and the economiser tubes were cleaned every morning by pushing straw bales between the tube banks and setting them on fire. It was amusing to see four or more cats sitting in a row, at a discreet distance, watching very attentively the morning ritual of firing the economiser. They knew that when this ceremony was over it was their turn to be fed.

There was once a magnificent cat who made his home in the foreman's office at the high kilns at Winnington in the late 1920's. I believe his name was Brownie. One afternoon I was talking to the foreman when Brownie walked in and sat down in the middle of the floor. The foreman said to him, "Get yourself a drink, Brownie." To my astonishment, he leaped on to the side of the wash basin, turned on the tap with his paw, lapped up some of the water and then closed the tap again.

Although Brownie was an intelligent animal in some respects, in others he must have been very stupid. All the time I knew him part of his tail was missing—removed by the works locomotive. He liked to sit down on the railway lines. I believe he was finally killed in the early thirties through persisting in this foolish habit.

Then there was a small gentle female cat, a pretty little thing, which lived on top of the caustic evaporators at Winnington

for, I believe, upwards of eight years. She was a first-class ratcatcher, and had the habit of carrying her kill, no matter in what part of the plant it was made, back to the control stage on the evaporators. This in itself was an arduous task for her, as people who have worked there will appreciate. It meant climbing up and down flights of steps and making detours round evaporators, heaters, condensers and the rest of the equipment of a large evaporator unit. I still recall how proudly she would show off before strangers.

The most remarkable thing about her was that although she lived for so many years literally surrounded by caustic soda, she was never known to receive the slightest burn. One hot summer day in 1935 I was, together with another colleague, engaged on some experimental work underneath one of the triple-effect evaporators. The floor was concrete, and here and there were small pools of liquid. The liquid might have been caustic solution of unknown strength or just water. The rule was to avoid all pools and run no risk of getting burnt.

Down a flight of near-by steps came the evaporator cat. It was a very warm day and she was thirsty. I watched her walk along the floor, carefully avoiding three small pools. At the fourth she stopped quite still for a few seconds and then she started to lap up the liquid. Her thirst quenched, she went on her way. I had handy a bottle of reagent by which caustic could be distinguished from water. I dropped a little into each of the four pools. The cat had been right: the fourth pool was water only. Later in the day I mentioned the incident to one of the shift operators. He was not surprised; he said he had seen her do the same many times before.

There are many other stories of these feline creatures which could be told. Among those which come to my mind just now is the story of Wallace and Shirtbutton. Why they should have been given these names I do not know. They were so attached to their master, who was a shift worker, that they often used to meet him coming in at the time office and proudly escort him to his job with their tails in the air.

Then there was Snowball, a female cat which was undoubtedly the greatest ratcatcher ever. Her progeny were in such demand on this account that the works manager had to issue a decree to the effect that no kittens were to be taken from her without official permission.

But the best cat story of all comes from Lostock Works. Dr. J. Muir Smith wanted a good ratter. A kitten was selected, but Dr. Muir Smith was still doubtful. The following dialogue ensued with the sponsor of the kitten.

"How do you know it'll be a good ratter?"

"How do I know? For why, for because his father was a good ratter."

"Really?"

"And what is more, Mr. Smith, his grandfather was a good ratter."

"So?"

"And his great-grandfather—he were a champion ratter."

"How do you know all this?"

"It's simple, Mr. Smith: his father and his grandfather and his great-grandfather were all t'same—old tom!"



When the foreman said "Drink," he helped himself from the wash-basin tap in the office



Railway lines had a fatal fascination for Brownie



Snowball's family was protected by managerial decree



Conway Castle, North Wales, built in the thirteenth century

(Photo: G. B. Smith)